

79 03139



DRAFT

SUPPLEMENT TO FINAL  
ENVIRONMENTAL IMPACT STATEMENT

# WILDCAT-SAN PABLO CREEKS

CONTRA COSTA COUNTY, CALIFORNIA  
WATER RESOURCES PROJECT

INSTITUTE OF GOVERNMENTAL  
STUDIES LIBRARY

FEB 10 1978

UNIVERSITY OF CALIFORNIA

Stream channelization - California - Contra  
Costa co.

DECEMBER 1977

U.S. ARMY ENGINEER DISTRICT, SAN FRANCISCO  
CORPS OF ENGINEERS  
211 MAIN STREET  
SAN FRANCISCO, CA 94105



79 03/39

[initials]



DEPARTMENT OF THE ARMY  
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS  
211 MAIN STREET  
SAN FRANCISCO, CALIFORNIA 94105

SPNED-E

16 JAN 1978

The San Francisco District, U.S. Army Corps of Engineers, has prepared a draft supplement to the environmental impact statement for the Wildcat - San Pablo Creeks Project, in accordance with the National Environmental Policy Act of 1969, P.L. 91-190. The inclosed document supplements the final environmental impact statement which was filed with the Council on Environmental Quality on 18 June 1976.

Preparation of the draft supplement to the statement has involved informal coordination with Federal, State and local agencies with responsibilities for, special interest in, or expertise on the project area.

This District is soliciting comments and views of appropriate governmental agencies, interested groups, and individuals on the inclosed draft supplement. Comments should be received within 45 days after the publication of the Draft Supplement by the Environmental Protection Agency in the Federal Register or the date of mailing of these copies to the Public, whichever is later.

Sincerely yours,

KARL F. SCHMID  
LTC, CE  
Acting District Engineer

1 Inclosure  
As stated



YERK, WALTER ROBERT  
EDWARD HENRY TOWNE BIBLIOGRAPHY 1868  
TRINITY LIBRARY 1868  
1868 BOSTON: TOWNE BIBLIOGRAPHY 1868



1868

Digitized by the Internet Archive  
in 2025 with funding from  
State of California and California State Library

<https://archive.org/details/C101697487>

## SUMMARY

DRAFT SUPPLEMENT TO THE  
ENVIRONMENTAL IMPACT STATEMENTWILDCAT AND SAN PABLO CREEKS  
WATER RESOURCES PROJECT  
CONTRA COSTA COUNTY, CALIFORNIA

(X) DRAFT SUPPLEMENT

( ) FINAL SUPPLEMENT

Responsible Office: U.S. Army Engineer District, San Francisco,  
California.

1. Name of Action: (X) Administrative ( ) Legislative

2. Description of Action: Channel improvement on Wildcat and San Pablo Creeks. Wildcat Creek: Minimal construction in salt marshes; a 250-foot wide earthen floodway from salt marshes to Verde School including trails, picnic areas, a stilling basin, and landscaping; a covered concrete culvert past Verde School, an open trapezoidal concrete channel upstream to approximately Vale Road, including trails and landscaping, a rectangular concrete channel from Vale Road to 400 feet upstream, and selected channel clearing to the end of the project, San Pablo Avenue. Mitigation of adverse impacts on cultural resources will be included if appropriate.

San Pablo Creek: Minimal construction in salt marshes; an earthen floodway to vicinity of the Santa Fe (SF) Railway tracks subsequently allowed to revert to natural vegetation; floodflows will be diverted through a concrete culvert from 17th Street under Road 20 to the vicinity of Giant Highway. The existing channel for the diverted reach will remain unimproved and will carry flows to channel capacity. Mitigation of adverse impacts on cultural resources will be included if appropriate.

3. a. Environmental Impacts: Protection from a 100-year frequency flood; urban development of the flood plain between the creek in accordance with Model Cities Program; proper functioning of improved storm sewers in North Richmond; improved housing in North Richmond; creation of a recreation complex with regional and local significance; creation of an environmental education opportunity; enhancement of riparian vegetation and creation of a greenbelt; and acquisition of about 75 acres of land for project improvements.

b. Adverse Environmental Effect: During construction only: noise, dust, bridge realignment, inconvenience. Long-term effects include loss of approximately five acres of riparian habitat along San Pablo Creek, conversion of segments of the channel to concrete with aesthetic loss, elimination or reduction in some existing flora and fauna. Elimination of some existing archaeological resources.

4. Alternatives: Reservoir, channel diversions and improvements; combined structural and non-structural measures; no action.

5. Final Statement to CEQ 18 June 1976.

Draft Supplement to EPA \_\_\_\_\_.

Final Supplement to EPA \_\_\_\_\_.

DRAFT

SUPPLEMENT TO THE ENVIRONMENTAL IMPACT STATEMENT  
WILDCAT AND SAN PABLO CREEKS  
WATER RESOURCES PROJECT  
CONTRA COSTA COUNTY, CALIFORNIA

TABLE OF CONTENTS

<u>Paragraph</u>	<u>Subject</u>	<u>Page</u>
1.00	INTRODUCTION	1
1.01	Purpose of Supplement	1
1.02	Scope of the Supplement	1
1.03	Authorization	1
1.04	Proposed Action	1
1.05	Environmental Impact Statement	1
2.00	PROJECT DESCRIPTION	2
2.01	General Location	2
2.03	Project Purpose	2
2.05	Improvement on Wildcat Creek	2
2.08	Improvement on San Pablo Creek	3
2.09	Project Economics	4
2.10	Cost Sharing	4
3.00	AIR QUALITY INVESTIGATION	6
3.01	Need for Air Quality Analysis	6
3.03	Methodology	6
3.05	Results of Analysis	7
3.06	Mitigation Measures	7
4.00	PRIME AND/OR UNIQUE FARMLAND	8
5.00	CULTURAL RESOURCES	9
6.00	RARE AND ENDANGERED SPECIES	11
6.01	Rare and Endangered Wildlife	11
6.03	Rare and Endangered Plants	11
6.05	Listing	11
6.06	Impact on Rare and Endangered Species	13

TABLE OF CONTENTS  
(Cont'd)

<u>Paragraph</u>	<u>Subject</u>	<u>Page</u>
7.00	EVALUATION OF DISPOSAL IMPACTS	14
7.01	Disposal Activities	14
7.02	Disposal Site Description	14
7.03	Impacts on Water Quality	14
7.04	Impacts on Municipal Water Supply Intake	14
7.05	Impacts on Fish and Wildlife	15
7.06	Impacts on Recreation	15
7.08	Impacts of Transporting Excavated Material	15
7.09	Water Quality Protection	15
7.10	Alternative Site Evaluation	16
8.00	RELATION TO EXECUTIVE ORDER 11990	17
9.00	COORDINATION	18

TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	ECONOMIC JUSTIFICATION	4
2	RARE AND ENDANGERED SPECIES	12

PLATES

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	LOCATION MAP	
2	PROJECT MAP	
3	PRIME AND/OR UNIQUE FARMLAND	
4	CULTURAL RESOURCES SURVEY	
5	DISPOSAL SITE	

APPENDIX

<u>No.</u>	<u>Title</u>	<u>Page</u>
A	AIR QUALITY INVESTIGATION	A-1
B	DISPOSAL SITE EVALUATION	B-1

## 1.00 INTRODUCTION

1.01 Purpose of Supplement. The purpose of this supplement to the Final Environmental Impact Statement is to present the results of additional investigations regarding cultural resources, air quality, prime and/or unique farmland, and impacts of dredged material disposal, all of which have been conducted since the filing of the Final Environmental Statement with the Council of Environmental Quality (CEQ).

1.02 Scope of the Supplement. This supplement includes an abbreviated project description and summaries of the investigations to date which have been conducted since the Final Environmental Statement was filed. The Final EIS is the primary source of information on the Wildcat-San Pablo Creeks Project and it should be consulted if more information is desired.

1.03 Authorization. The project for flood control on Wildcat and San Pablo Creeks, Contra Costa County, California was authorized under Section 201 of Public Law 89-298, 1965 Flood Control Act. The project was authorized by resolutions of the Committee on Public Works and Transportation of the U.S. House of Representatives on 9 June 1976 and the Committee on Public Works of the U.S. Senate on 15 June 1976, substantially in accordance with the recommendations of the Secretary of the Army and the Chief of Engineers in House Document 94-511.

1.04 Proposed Action. The Wildcat-San Pablo Creeks Project consists of the independent improvement of Wildcat and San Pablo Creeks through the construction of earthen channels, trapezoidal, rectangular and covered concrete channels, an impoundment area, recreational facilities, and landscaping along the channel.

1.05 Environmental Impact Statement. In June 1974, a Final Environmental Impact Statement (EIS) for the Wildcat-San Pablo Creeks Project was filed with the Council of Environmental Quality (CEQ). That EIS was prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, Public Law 91-190, 42 U.S.C. Sec. 4321 et seq. The purpose of the EIS was to provide a complete description of the Wildcat-San Pablo Creeks Project and the environmental setting within which it would be constructed, and to identify the impacts, both beneficial and adverse, upon the environment due to the project. An analysis of the alternatives to the proposed project was also included.

## 2.00 PROJECT DESCRIPTION

2.01 General Location. The proposed Wildcat-San Pablo Creeks project is located on the gently sloping alluvial plain between the Berkeley Hills and San Francisco Bay, approximately 11 miles north-northeast of the City of San Francisco. The project is located within the following political jurisdictions: the City of San Pablo, the City of Richmond, and the County of Contra Costa. The location of the project is shown on Plate 1.

2.02 An abbreviated description of the project is presented in the paragraphs that follow. The purpose of this description is to acquaint the reader of this supplement with the Wildcat-San Pablo Creeks project in general terms. For a more detailed project description, the reader is referred to the Final EIS, dated November 1974.

2.03 Project Purpose. The major problem in the Wildcat-San Pablo Creek basins is the damage resulting from overbank flooding, a chronic seasonal problem which occurs more than once in some years. The proposed project would provide flood protection for portions of the City of San Pablo and the North Richmond community. The flood control project is integrated with the Model Cities plan and would permit North Richmond to grow into a more viable community. The Richmond Model Cities Program has been the impetus for much of the community planning that has been formulated for the project area. The Contra Costa County Board of Supervisors and the Richmond City Council, in order to carry out the Model Cities Plan, have recommended that flood control and storm drainage be utilized along the common flood plain of Wildcat and San Pablo Creeks.

2.04 Recreation facilities are limited in the urban area of the flood plain. There is a need for such facilities at the present time, especially near to the underprivileged neighborhood of North Richmond. The park and trail system developed in conjunction with the proposed project will satisfy a significant portion of this need. The proposed recreation plan conforms conceptually to all existing land use plans.

2.05 Improvement on Wildcat Creek. The improvement on Wildcat Creek is described in two reaches from the upstream end of the project to Verde School and from Verde School to the downstream end of the project. The improvements on Wildcat Creek from the upstream end of the project at San Pablo Avenue to approximately 400' above Vale Road will be selective channel clearing. From this point, the project will consist of approximately 700 linear feet of rectangular concrete channel and from

Vale Road to Verde School will consist of approximately 7,600 linear feet of benched trapezoidal textured concrete channel and 700 linear feet of rectangular concrete channel. The channel bottom width will be 12 feet for most of the length with an average depth of 10 feet. The capacity of the channel will be 2,300 cubic feet per second with a minimum of two feet freeboard. This channel portion would include landscaping with shrubs, vines and trees. The bench will be six to eight feet wide and will provide a trail from the downstream end of this reach to near 23rd Street, where it will connect to the regional trail system and provide access to Alvarado Park, Wildcat Canyon Park and Tilden Regional Park.

2.06 Improvements on Wildcat Creek in the reach that extends from Verde School to the downstream end of the project will be approximately 6,400 linear feet. This segment of the improvement is essentially a 400-foot box culvert in front of Verde School, 350-foot stilling basin and a benched trapezoidal earth channel with low offset levees on either side. The channel bottom will vary from 16 to 64 feet and the depth of flow will average five feet. A linear park approximately 250 feet wide, placed within the floodway between the levees and extending the length of the channel reach will include a nature study area, two small impoundments for environmental quality, picnic facilities, trail system and landscaping.

2.07 At the lower end of the channel improvement on Wildcat Creek, a staging area for access to the salt marshes would be provided. A boardwalk would lead out over the marshland from the downstream end of the trail system and continue north to the mouth of the San Pablo Creek. Channel improvement would continue into the salt marsh.

2.08 Improvement on San Pablo Creek. The improvements on San Pablo Creek will consist of a 2,300-foot diversion under Road No. 20 beginning near 17th Street, a 300-foot section of rectangular concrete transition channel averaging 85 feet wide and 14 feet deep to a location upstream of the Giant Highway bridge, and a 8,500 linear feet enlargement of the downstream portion of the existing creek. This downstream portion of the channel will have one natural sideslope and one sideslope excavated to increase the capacity of the channel to 5,100 cubic feet per second. Low offset levees will provide freeboard protection. The excavated slope will be shaped to form a bench that varies in width from 50 to 300 feet and will be replanted with natural vegetation and lined with trees. The widened bench will provide a permanent open space or greenbelt to serve as a buffer zone between future residential land use and industrial development. Riprap will be placed on the slope from the edge of the bench to the channel bottom for bank protection. Channel improvement would continue into the salt marsh.

2.09 Project Economics. The economic justification for the proposed improvement is the ratio of total expected annual tangible benefits, \$1,700,000, to the total annual charges, \$1,351,000. This benefit-to-cost ratio is 1.3 to 1.0. The incremental economic justification for flood control is 1.2 to 1.0 and for recreation is 1.6 to 1.0 as shown in Table 1. This evaluation is based on a 6-3/8% interest rate and a 100-year period of economic evaluation.

TABLE 1  
ECONOMIC JUSTIFICATION

Item	Annual Benefit	Annual Cost	Benefit-to-Cost Ratio
Flood Control	\$1,420,000	\$1,174,000	1.2
Recreation	<u>280,000</u>	<u>174,000</u>	1.6
Total	\$1,700,000	\$1,351,000	1.3
Without ARA*			
Benefits	\$1,641,000	\$1,351,000	1.2

\*ARA: Area Redevelopment Benefits

2.10 Cost Sharing. Present criteria for sharing the cost between Federal and non-Federal interests for channel and levee improvements are based on the standard requirements established as Federal policy for "local protection" works. Under this policy, non-Federal interests would be required to furnish all lands, easements and rights-of-way and damages, including relocations required by the plan and, in the case of recreation facilities, any additional amount needed to bring the total non-Federal cost for these facilities to not less than 50 percent of the total cost of recreation. Non-Federal interests would also bear the costs of operating and maintaining the project features after construction in accordance with Federal requirements.

2.11 The Federal Government may reimburse non-Federal interests one-half of their excess expenditures over the estimated cost of construction of the flood control portion of the project, in accordance with the provisions of Section 3 of the 1936 Flood Control Act, Public Law No. 738. The total non-Federal share, prior to whatever reimbursement the

Federal Government may make to local interests is \$10,763,000. Local interests are actively involved in considering alternative methods of financing the non-Federal cost of the proposed project. State legislation (Assembly Bill 743) provides for State of California participation in financing a portion of the non-Federal costs.

2.12 The Federal Government would be responsible for all flood control construction costs, and all recreation construction costs not in excess of 50 percent of total recreation costs, estimated at \$450,000. The total Federal share, excluding any reimbursements that may be made to non-Federal interests in accordance with Section 3 of the 1936 Flood Control Act, Public Law No. 738, is estimated to be \$8,137,000.

2.13 The non-Federal cost for land easements, rights-of-way, and relocations, estimated to be \$10,313,000 is greater than the Federal Investment, Flood Control estimated at \$7,687,000, a reimbursement of half the difference (\$1,313,000) may be made by the U.S. Government. Should that reimbursement be made, the total Federal and total non-Federal investments would both be \$9,450,000.

2.14 The operation, maintenance and replacement of flood control works and recreation facilities are the responsibilities of the local sponsoring organization. Normal operation and maintenance cost, estimated at \$24,000, would be expected for the levees, channels, bridges, and selective channel clearing. The channel improvement in both creeks is designed to deposit the major portion of the silt in the stilling basins which will concentrate the silt and facilitate the silt removal. Fencing, miscellaneous metal work and interior drainage facilities are considered to have a functional life of 30 years and would require replacement during the economic life of the project. The annual cost of replacement for these items is estimated to be \$2,000. Operation, maintenance and replacement of the park facilities and trail systems are estimated to be \$120,000 annually. This includes \$108,000 for operation and maintenance and \$12,000 for replacement of facilities.

### 3.00 AIR QUALITY INVESTIGATION

3.01 Need for Air Quality Analysis. The Clean Air Act Amendments of 1970 require that each state submit an Implementation Plan to the U.S. Environmental Protection Agency (EPA) outlining the control strategy that will be used by the state to attain and/or maintain the Ambient Air Quality Standards. In a revision to the State of California Implementation Plan, the State Air Resources Board recommended to EPA that the San Francisco Bay Area be designated as an Air Quality Maintenance Area (AQMA) since the Ambient Air Quality Standards are not expected to be met by the target year of 1985. To realize significant, long-term controls over areas with air pollution problems (AQMA's), a detailed air quality analysis is performed for all developments proposed within an AQMA to evaluate the project's impact on the air quality in the region.

3.02 The Wildcat-San Pablo Creeks project is located in the San Francisco Bay Area Air Basin, an area designated as an Air Quality Maintenance Area. Implementation of the proposed project, in conjunction with the Model Cities Program, will result in the additional development of recreational facilities and 225 single-family residences by the year 1995. An air quality analysis has therefore been performed to quantitatively determine project-related emissions of air pollutants and to evaluate the impact upon the air quality in the air basin.

3.03 Methodology. To perform an air quality analysis, certain basic data are required to compute pollutant emissions resulting from a proposed project. The year 1995 was selected as the year for the air quality analysis since most of the project-related development on the flood plain is expected to be completed by that time and the traffic volume projections by Caltrans extend to that year. The Bay Area Air Pollution Control District (BAAPCD) emission projections (Background) extend only to the year 1990 and due to the difficulty of quantifying pollutant emissions past 1990, the BAAPCD 1990 background emissions and the Caltrans 1995 traffic projections are used in this analysis. This method is expected to result in somewhat conservative values for the pollutant emissions.

3.04 The methodology used in this analysis of air quality impact was that developed by the Bay Area Air Pollution Control District (BAAPCD), as described in its Information Bulletin titled, Guidelines for Air Quality Impact Analysis (Bay Area Air Pollution Control District, 1975). In accordance with the BAAPCD guidelines, air quality impact computations were made for project-related pollutant emissions in terms of: (1) line source impact, i.e., pollutant concentrations along and immediately adjacent to the most heavily traveled links (roadways) in the traffic circulation system in and around the project area; (2) area source impact, i.e., pollutant concentrations in the immediate air basin, a one-kilometer square area centered on the project site; and (3) regional impact, i.e., pollutant concentrations contributed by project-related emissions to the regional air basin.

3.05 Results of Analysis. The air quality analysis conducted to identify impacts of the proposed project are detailed in Appendix A. Numerical results of the analysis are summarized on Table 8 of Appendix A, titled Area Source and Regional Air Quality Impacts for 1995. The results show that the background levels for 3-hour non-methane hydrocarbon concentration and the 24-hour sulfur dioxide concentration exceed air quality standards. The results also show that project-related impacts on air quality would be insignificant.

3.06 Mitigation Measures. The staff of the Environmental Protection Agency was contacted regarding possible mitigation measures to reduce the impact of the project-related emissions upon the air quality. Mitigation measures that deal with methods to reduce the vehicle miles traveled that have been proposed by the Cities of Richmond and San Pablo and the County of Contra Costa in the Environmental Statement for the West Contra Costa Wastewater Treatment Plan would also apply for the Wildcat-San Pablo Creeks Project. These methods are described in Appendix B. Such mitigation measures would reduce the vehicle miles traveled by "encouraging" people to switch to public transportation or car pooling by making such modes of transportation more attractive and convenient.

#### 4.00 PRIME AND/OR UNIQUE FARMLAND

4.01 The soils on the flood plain between Wildcat and San Pablo Creeks, in the area scheduled for land enhancement in the Model Cities Plan, are classified as Capability Unit I as shown on Plate 3. This classification is based on the Soil Conservation Service's maps of Contra Costa County. Capability Unit I soils are considered as prime farmland since they have the potential for use in agricultural crop production with little or no restriction. Although this land has been used historically for agricultural crop production, it hasn't been used for that purpose since prior to World War II.

4.02 The total acreage of prime farmland (Capability Unit I) within the Model Cities area amounts to approximately 139 acres. Of this total, about 58 acres are already developed with 30 acres in flower production and 28 acres in warehousing, corporation yards, manufacturing and miscellaneous uses. Due to the high value of the 30 acres committed to flower production, this use is not expected to change, but the 28 acres in the other uses is expected to be converted to single-family residential in accordance with the Model Cities Plan. It is estimated that about 10 acres of prime farmland would be converted to flood control purposes as a direct impact of project implementation.

4.03 Therefore, 99 acres [139-(30+10)] would be converted to residential use in accordance with the Model Cities Plan as an indirect impact of the project implementation. This would mean an irreversible commitment of prime farmland for residential development.

4.04 According to the Soil Conservation Service, there is no land classified as unique farmland in the project area.

## 5.00 CULTURAL RESOURCES

5.01 A partial cultural resource survey of the authorized project area and adjacent lands was performed by Dr. David Fredrickson representing the Foundation for Educational Research, California State College, Sonoma, under contract to the San Francisco District, Corps of Engineers. Work under said contract was completed in April 1977. The areas surveyed are shown on Plate 4. Approximately 2,000 acres of land were subject to intensive field reconnaissance which resulted in the identification of six previously recorded prehistoric sites, two previously unrecorded prehistoric sites, three locations of possible prehistoric sites and two previously unrecorded historic sites. Six of the prehistoric sites and one historic site are located within the project area and will most probably be directly impacted by the authorized project. Data pertaining to the remaining three prehistoric sites and one historic site located in the area of potential indirect impact have been furnished to Contra Costa County for purposes of cultural resource management and land use planning, and as a matter of courtesy to the Department of Anthropology at Contra Costa College.

5.02 On San Pablo Creek, archaeological sites CA-CCO-10, CA-CCO-132, CA-CCO-268, CA-CCO-269 and historic site H-3 are located within the project right-of-way and will be directly impacted. On Wildcat Creek, archaeological sites CA-CCO-275 and CA-CCO-273 are located within the project right-of-way and will be directly impacted. Several of the aforementioned archaeological sites may be fragmented sites represented by isolated deposits of cultural materials which due to historic land-use, may have become physically dissociated from primary site location or, they may indeed represent discrete archaeological sites. Testing of the areas identified as possible archaeological sites will reveal the probability of site integrity and research potential. Direct impacts to sites located in the right-of-way of the authorized project will be irreversible and adverse.

5.03 Prior to the performance of the initial cultural resource survey, coordination was effected with the Contra Costa Historical Society and the Native American Community Council of Richmond. Immediately preceding fieldwork, the Native American Community Council disbanded. The District has initiated coordination with Mr. Anthony Tom of the American Indian Manpower Council of San Pablo and has requested assistance from the newly created Native American Heritage Commission in identifying other appropriate and interested local Native American groups for coordination. In addition, the District has coordinated with the Chinese Historical Society of America and is attempting to locate interested local Japanese, Black and Portuguese groups or individuals who might be interested in contributing to the cultural resource survey.

5.04 Copies of the initial survey document have been forwarded for review and comment to the Director of the Office of Archaeology and Historic Preservation, Department of the Interior, State Historic Preservation Officer, Regional Officer of the District 01 State Archaeological Survey, Executive Secretary of the Native American Heritage Commission and to other agencies, societies, institutions and individuals who have expressed an interest and need to know.

5.05 The field reconnaissance data from the areas of both direct and indirect impacts will form a basis for the Corps, concerned agencies and the public to evaluate alternative mitigation plans should further testing indicate the presence of "significant" cultural resources within the project right-of-way. The data will also permit the comparative evaluation of cultural resources for a determination of relative significance.

5.06 Evaluation of the cultural resources with respect to their eligibility for nomination to the National Register of Historic Places is difficult and imprudent at this time. The field reconnaissance data currently available is incomplete and inadequate as a basis for professional resource evaluation. Therefore a program providing for the systematic testing and analysis of the resources which would be subject to direct impacts has been developed. This program is designed to secure representative samples of each resource sufficient to determine site integrity, research potential and significance in accordance with procedures and criteria set forth in the National Historic Preservation Act of 1966 and Executive Order 11593 of 13 May 1971. The program will take from eight to twelve months to complete and will be implemented in fiscal year 1978.

5.07 The San Francisco District, Corps of Engineers, will maintain appropriate coordination with the aforementioned agencies and will comply with the procedures set forth in: (a) Section 106 of the National Historic Preservation Act; (b) Section 1(3) of Executive Order 11593, 13 May 1971; (c) Section 2(b) of Executive Order 11593; (d) Section 101 (b)(14) of the National Environmental Policy Act as well as all other relevant Federal legislative and operational guidelines throughout the course of project planning and design. If appropriate, a plan for the preservation and mitigation of cultural resources would be implemented.

## 6.00 RARE AND ENDANGERED SPECIES

6.01 Rare and Endangered Wildlife. The salt marsh complex located at the mouths of Wildcat and San Pablo Creeks is a viable and productive marsh, which supports a variety of marine fishes, waterfowl, birds and small mammals, including six rare or endangered species. The California clapper rail, California brown pelican and salt marsh harvest mouse are listed as endangered by the California Department of Fish and Game and the U.S. Fish and Wildlife Service. The Alameda striped racer, a snake, and the California black rail are listed as rare by the California Department of Fish and Game. All of these species are highly dependent on the salt marsh system and have been observed in this area.

6.02 The Aleutian Canada goose may use this marsh as a wintering area during their migration and is also on the Federal endangered species list. The Samuel's song sparrow (Melospiza melodia samuelis), found in the project area, is not officially endangered, however the U.S. Fish and Wildlife Service is concerned that it will become increasingly rare as its habitat, pickleweed marsh, is diminished.

6.03 Rare and Endangered Plants. The California Native Plant Society has compiled an "Inventory of Rare and Endangered Vascular Plants of California" (1974). In this report they categorized the plants found in the State by county and by topographic quadrangle. The Santa Cruz tarweed and Northern California black walnut are listed as being found in the Richmond area in Contra Costa County are are given the status, "endangered in part". Both of these plants are on the proposed list of endangered species compiled by the U.S. Fish and Wildlife Service and published in the Federal Register in June 1976.

6.04 The California Native Plant Society has listed six species of plants found in the Richmond area, to which they have given the status, "rare, but not endangered". These plants are not on any proposed federal lists, however they are listed in the Table that follows. Two of these species, Fritillaria liliacea and Sirca occidentalis, are generally found at lower elevations, and therefore may be found within the project area. The remaining four species in this latter category are described by Mung (1968) as occurring at higher elevations, and would probably not be found in the project area.

6.05 Listing. A listing of the endangered and rare animals and plants which either are or may be found in the project area, including scientific names, and for plants, families, are shown on Table 2.

TABLE 2  
RARE AND ENDANGERED SPECIES

A. RARE AND ENDANGERED ANIMALS:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>	
		<u>Federal</u>	<u>State</u>
California clapper rail	<u>Rallus longirostris obsoletus</u>	E	E
California black rail	<u>Latterallus jamaicensis coturniculus</u>		R
Aleutian Canada goose	<u>Branta Canadensis leucopareia</u>	E	
Salt marsh harvest mouse	<u>Reithrodontomys raviventris</u>	E	E
Alameda striped racer	<u>Masticophis lateralis euryxanthus</u>		R
California brown pelican	<u>Pelacanus occidentalis californicus</u>	E	E

B. PROPOSED FOR ENDANGERED STATUS AND RARE PLANTS:

<u>Scientific Name</u>	<u>Common Name</u>	<u>Family</u>	<u>Proposed</u>	<u>Calif. Native</u>
			<u>Federal</u>	<u>Plant Society</u>
<u>Holocarpha macradenia</u>	Santa Cruz tarweed	Asteraceae	E	E
<u>Jugeans hindsii</u>	N. Calif. black walnut	Jugeandaceae	E	E
<u>Calochortus pulchellus</u>	-	Liliaceae		R
<u>Dirca occidentalis</u>	-	Staphyleaceae		R
<u>Erigeron petrophilus</u>	-	Compositae		R
<u>Eriophyllum jepsonii</u>	-	Compositae		R
<u>Fritillaria liliacea</u>	-	Liliaceae		R
<u>Viburnum ellipticum</u>	-	Caprifoliaceae		R

KEY

E = Endangered

R = Rare

6.06 Impact on Rare and Endangered Species. The project would not have a significant adverse impact on endangered wildlife found in the area, since these species are found in the salt marsh on which the project would not have a significant effect. The average flow rate estimated to occur in the completed channels should not have an adverse impact on the marsh, and hence, not on these endangered species. High flood flows may scour portions of the marsh at the end of the channel, which would have a slight adverse impact on marsh-dependent wildlife.

6.07 To date, no rare or endangered plants have been identified in the project area. If an identification is made, a critical habitat evaluation will be requested from the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act of 1973.

## 7.00 EVALUATION OF DISPOSAL IMPACTS

7.01 Disposal Activities. Channel excavation and related construction will result in the displacement of about 380,000 cubic yards of material. Approximately 80 percent of this total material, 300,000 cubic yards, is to be removed from the lower reaches of both creeks (roughly one and a half miles from the downstream end of the project). At this time, transportation of excavated material to the disposal site is expected to be accomplished by truck. It is conceivable that a pipeline could be designed to accommodate the transportation of excavated waste material from the lower reach of San Pablo Creek to the Richmond Sanitary Landfill. It is also conceivable that a conveyor belt might be used.

7.02 Disposal Site Description. The Richmond Sanitary Landfill site (see Plate 5) is located along the waterfront of San Pablo Bay between San Pablo Creek to the northeast and Wildcat Creek to the south. It encompasses 350 acres; however, the area considered as a disposal site for the project includes only the 200 acres that have already experienced sanitary landfill. This area has a capacity for about 380,000 cubic yards of material. The site was a viable marsh before the fill occurred, but now is a typical sanitary landfill site (mostly barren exposed dirt and/or refuse, and supports a small animal population). This landfill, designated as Class IIA, provides protection of water quality from "Group 2 and 3 Wastes." Group 2 wastes are chemically or biologically decomposable, nontoxic and would not reduce the quality of usable waters. Group 3 wastes are nonwater soluble, nondecomposable, and inert solids. A Class I pond for toxic wastes is also within the site boundaries.

7.03 Impacts on Water Quality. Construction of containment dikes and permanent sealing of the disposal area would prevent possible runoff or leaching from the disposal site into surrounding tidelands. Retention dikes have been constructed enclosing the Class I pond to comply with the San Francisco Bay Regional Water Quality Control Board Order 76-28. The diked area also includes the Class IIA area being considered as a disposal site for the proposed project.

7.04 Impacts on Municipal Water Supply Intake. Placement of disposal material on this site would not affect the municipal water supply of the Richmond area, due to the dependence of the local community on surface water, not groundwater, for its water supply. The landfill site and other disposal sites within the project area in the lower reaches of both Wildcat and San Pablo Creeks are located, however, in an aquifer area that may be utilized as an emergency source of water. Apparently, the groundwater aquifer is located at depths ranging from 80 feet to more than 180 feet in the landfill site, and subsurface seepage to usable groundwater supplies is remote. Historical wells in lowland areas, west of the railroad tracks, have depended on strata in the 200-foot range to obtain potable supplies.

7.05 Impacts on Fish and Wildlife. Fishery and wildlife resources are of high value in the surrounding area, but the filled portion of the site has been altered drastically by man's activities. Topsoil is pushed over the refuse as it is deposited at the edge of the fill, but behind the active dump, vegetative growth is being established. As a result, various animals are moving into this area. Many gulls are seen flying over the refuse site and feeding. Personnel of the U.S. Fish and Wildlife Service have informally indicated that they would not object to the placement of fill as cover material on the portions of the site that have already been filled, and which are being considered as a disposal area for the proposed project. This activity would increase the upland habitat available for wildlife. The habitat of the shellfish has already been eliminated, so no adverse effect would be experienced from further disposal upon the area previously filled.

7.06 Impacts on Recreation. Recommendations have been made that this site (the portion already filled) be converted, as soon as possible, to a public park, and that foot and bike trails be constructed along the San Pablo Bay front of the proposed park and adjacent tideland areas. The East Bay Regional Park District is in the process of developing a regional park on top of the filled portion of the site, and bicycle and pedestrian trails from San Pablo Ridge to the Bay Shoreline, and from there north to Point Pinole Park.

7.07 Placing disposal material on the filled portion of the site would not have an adverse effect on recreational activities, which include fishing and hunting. In fact, using the disposal material as cover material on this part of the sanitary landfill site and building a park on top of the fill, would have a beneficial impact on recreational opportunities for the East Bay Area and North Richmond. Use of the sanitary landfill site may provide the opportunity to participate in the development of some of the proposed recreational facilities.

7.08 Impacts of Transporting Excavated Material. Noise and construction activity associated with loading and transporting the material by truck would have a minor disruptive effect on vegetation and wildlife adjacent to the project site. This would be of particular concern at the extreme lower reaches of the project in both creeks, where the project borders a viable and important marsh. This marsh is utilized heavily in the fall and winter months by ducks and other waterfowl in the Pacific Flyway. Transport of the excavated material would be scheduled in the late spring and summer months, the normal construction season, to minimize disruption.

7.09 Water Quality Protection. Previous construction of retention dikes would restrict movement of leachate into adjacent tidelands. Contract specifications would include provisions to insure that no leaching or runoff would occur into adjacent areas and that all Federal, State and local water quality standards are met.

7.10 Alternative Site Evaluation. The Contra Costa County Flood Control and Water Conservation District submitted six potential disposal areas adjacent to the project and three areas further away from the project area for consideration. An evaluation of these sites was made which gives special emphasis to impacts related to wetlands. This evaluation is included as Appendix B of this supplement. The disposal sites adversely affecting wetland areas were eliminated from consideration. The Richmond Sanitary Landfill site was selected since it would have no significant adverse impact on water quality, water supply, shellfish beds, fish and wildlife, recreation, sediment quality or air quality while at the same time providing adequate capacity for dredged material disposal.

## 8.00 RELATION TO EXECUTIVE ORDER 11990

8.01 Wetlands have been declared an important national resource warranting specific measures for their preservation by the President in Executive Order 11990, Protection of Wetlands, 24 May 1977. This Executive Order prohibits construction in wetlands unless there is no practicable alternative to such construction and that the proposed action includes all possible measures to minimize harm to wetlands which may result from such use.

8.02 The proposed project includes extensions of trapezoidal earth channels and levees into the marsh for the purpose of providing a smoother hydraulic transition of floodwaters from the project to the salt marshes and, thence, into San Pablo Bay. Excavation would extend a short distance into the marsh. The levees on Wildcat Creek would extend 800 feet into the marsh and the levees on San Pablo Creek would extend 1,000 feet into the marsh. These project features are shown on Plate 2.

8.03 The proposed levees constitute a minor change to the wetland areas since there would be no change in the pattern of tidal inundation. Although the alteration constitutes a minor change, it is also recognized that the cumulative effect of numerous minor changes may result in a major impairment of wetland resources. The proposed action will not induce other alterations of the wetland resources.

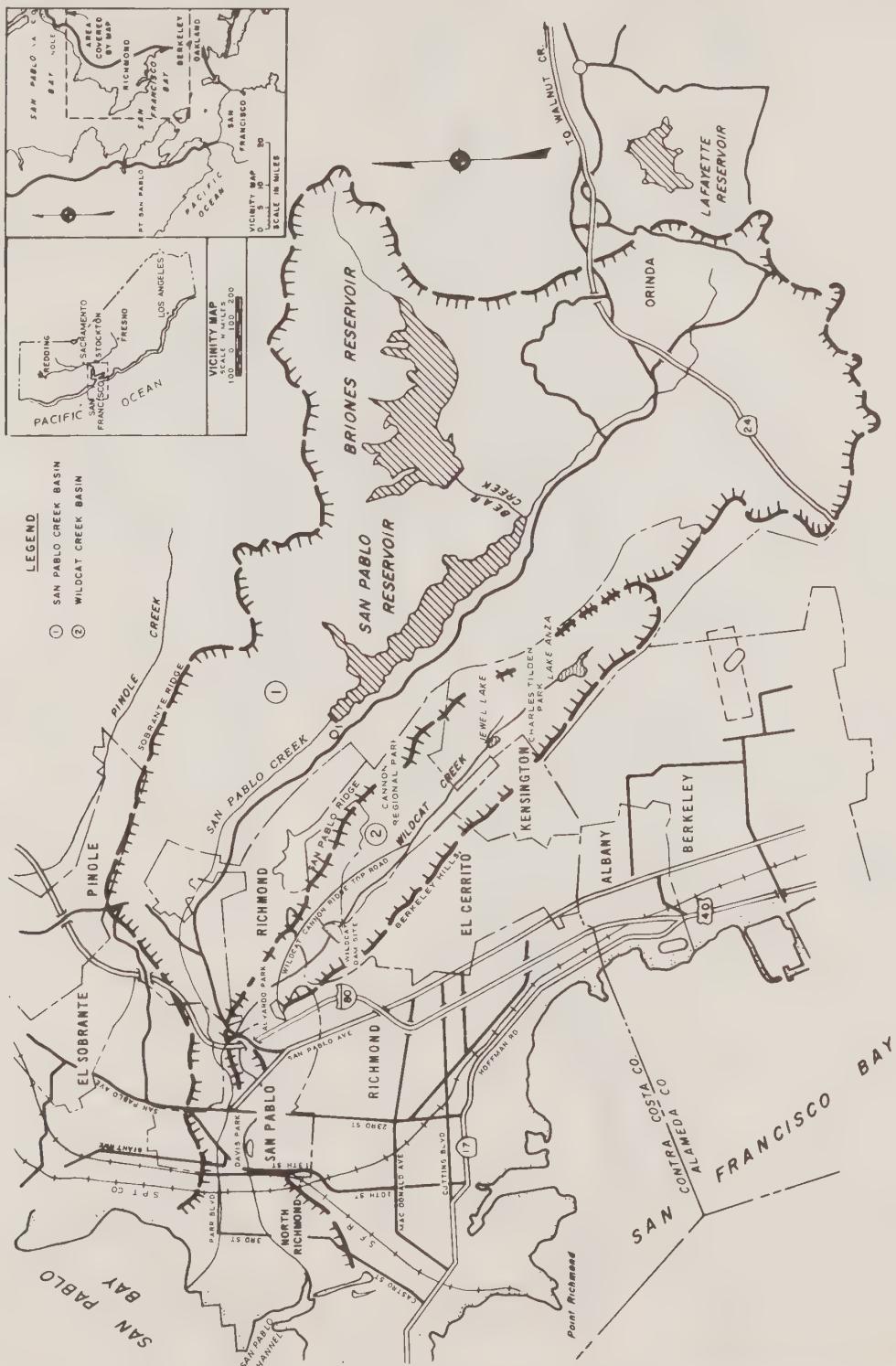
8.04 The purpose of the levees is to prevent floodwaters, which would be at a higher elevation than the Bay, from backing up and inducing greater flooding on upstream lands flanking the channel. Alternatives to the levees include a deeper channel and purchasing flowage easements. If the channel were deeper, it would extend through the marsh. This deep channel would cause the marsh to be drained, which would in turn disrupt the integrity of the aquatic ecosystem. Allowing induced flooding to occur is not consistent with the planning objectives and would require the purchase of flowage easements. Therefore, there is no practicable alternative to the proposed action.

8.05 The proposed action includes all practicable measures to minimize harm to the wetlands while meeting the flood control objective. The District Engineer concludes that the benefits of meeting this objective outweigh the damage to the wetland resource.

8.06 Disposal activities will have no significant adverse impacts on wetland resources.

## 9.00 COORDINATION

9.01 The Final EIS reflects both formal and informal coordination with individuals, groups and Federal, State and local agencies. This supplement is another step of the EIS process and represents further coordination. The draft of the supplement is distributed to all parties that received the Final EIS and other parties requesting it. Following the distribution of the draft, a 45-day period is provided to allow the public to submit comments that will be addressed in the final supplement.



## ENVIRONMENTAL STATEMENT

CONTRA COSTA COUNTY CALIFORNIA

## WILDCAT SAN PABLO CREEKS

## GENERAL MAP OF BASINS

U.S. ARMY ENGINEER DIST., SAN FRANCISCO, C OF E  
FILE NO. TO ACCOMPANY REPORT

TO ACCOMPANY REPORT  
DATED





ENVIRONMENTAL STATEMENT  
CONTRA COSTA COUNTY CALIFORNIA  
WILDCAT SAN PABLO CREEKS  
PLAN OF IMPROVEMENT  
U.S. ARMY ENGINEER DIST., SAN FRANCISCO, C OF E  
FILE NO.   
TO ACCOMPANY REPORT  
DATED



## LEGEND

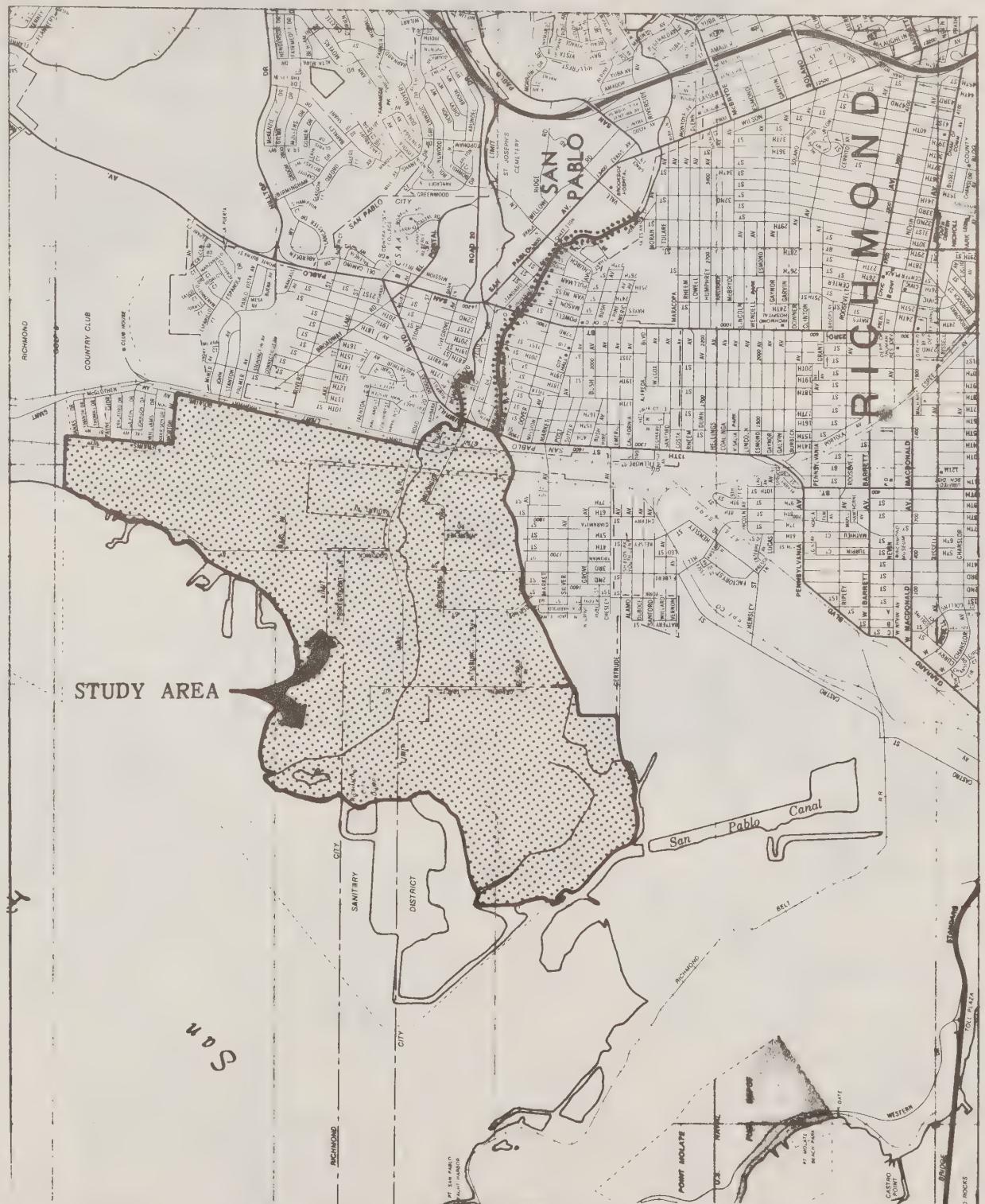
- [Dotted Pattern] GROUP I SOILS
- [Cross-hatched Pattern] GROUP II SOILS
- [Vertical Stripes] DIRECT IMPACT
- [Diagonal Stripes] INDIRECT IMPACT



ENVIRONMENTAL STATEMENT  
 CONTRA COSTA COUNTY CALIFORNIA  
 WILDCAT – SAN PABLO CREEKS  
 SOIL GROUPS

U.S. ARMY ENGINEER DIST., SAN FRANCISCO, C. OF E  
 DRAWN: FILE NO.  
 TRACED:  
 CHECKED:  
 TO ACCOMPANY REPORT  
 DATED





CONTRA COSTA COUNTY CALIFORNIA  
WILDCAT & SAN PABLO CREEKS  
CULTURAL RESOURCE SURVEY

U.S. ARMY ENGINEER DIST., SAN FRANCISCO, C OF E  
DRAWN: FILE NO.  
TRACED: TO ACCOMPANY REPORT  
CHECKED: DATED



KEY

— SITE BOUNDARY





AIR QUALITY INVESTIGATION

WILDCAT - SAN PABLO CREEKS  
CONTRA COSTA COUNTY, CALIFORNIA

APPENDIX A

PREPARED BY

U.S. ARMY ENGINEER DISTRICT, SAN FRANCISCO  
CORPS OF ENGINEERS  
SAN FRANCISCO, CALIFORNIA

NOVEMBER 1977



APPENDIX A  
AIR QUALITY INVESTIGATION

TABLE OF CONTENTS

<u>Paragraph</u>	<u>Subject</u>	<u>Page</u>
1.00	INTRODUCTION	A1
2.00	BASIC DATA AND ASSUMPTION	A-1
3.00	METHODOLOGY	A-2
4.00	LINE SOURCE ANALYSIS	A7
5.00	AREA SOURCE ANALYSIS	A-11
6.00	REGIONAL IMPACT ANALYSIS	A-11
7.00	VEHICLE MILES TRAVELED	A-13
8.00	MITIGATION MEASURES	A-13

LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
A-1	Daily Trip End Generation by Project in 1995	A-4
A-2	Vehicle Miles Traveled	A-4
A-3	Roadway Capacity and Link Numbers	A-5
A-4	Traffic Volumes on Major Streets In and Near North Richmond	A-6
A-5	Line Source Impact Concentrations At Roadway: Carbon Monoxide 1995	A-8
A-6	Line Source Impact Concentration for 1-Hour Averaging Time Sensitive Receptors: Carbon Monoxide 1995	A-9
A-7	Line Source Impact Concentration for 8-Hour Averaging Time Sensitive Receptors: Carbon Monoxide 1995	A-10
A-8	Area Source and Regional Air Quality Impacts for 1995	A-12

TABLE OF CONTENTS  
(Cont'd)

FIGURE

<u>No.</u>	<u>Title</u>	<u>Page</u>
A-1	Location of UTM Gridsquare and Road Segments	A-3

APPENDIX A  
AIR QUALITY INVESTIGATION

1.00 INTRODUCTION

1.01 The Clean Air Act Amendments of 1970 require that each state submit an Implementation Plan to the U.S. Environmental Protection Agency (EPA) outlining the control strategy that will be used by the state to attain and/or maintain the Ambient Air Quality Standards. An implementation plan thus becomes a vehicle for the air quality planning effort for a region (air basin). Elements of the implementation plan must provide for land use and transportation controls, air quality monitoring, and a procedure for review of future development to determine its impact upon the air quality in a region. In a revision to the State of California Implementation Plan, the State Air Resources Board recommended to EPA that the San Francisco Bay Area be designated as an Air Quality Maintenance Area (AQMA) since the Ambient Air Quality Standards are not expected to be met by the target year of 1985. To realize significant, long-term controls over areas with air pollution problems (AQMA's), a detailed air quality analysis will be performed for all developments proposed within an AQMA to evaluate the project's impact on the air quality in the region.

1.02 The Wildcat-San Pablo Creeks project is located in the San Francisco Bay Area Air Basin, an area designated as an Air Quality Maintenance Area. Implementation of the proposed project in conjunction with the Model Cities Program will result in the additional development of recreational facilities and 225 single-family residences by the year 1995. An air quality analysis has therefore been performed to quantitatively determine project-related emissions of air pollutants and to evaluate the impact upon the air quality in the air basin.

2.00 BASIC DATA AND ASSUMPTIONS

2.01 To perform an air quality analysis, certain basic data are required to compute pollutant emissions resulting from a proposed project. In this air quality analysis, as in most analyses, a large percentage of the basic information was not available. Due to fiscal and temporal constraints, certain assumptions about existing and future conditions had to be made in order to complete the analysis. The data and assumptions used in this air quality analysis are discussed in the paragraphs that follow.

2.02 The year 1995 was selected as the year for the air quality analysis since most of the project-related development on the flood plain is expected to be completed by that time and the traffic volume projections by Caltrans extend to that year. The Bay Area Air Pollution Control District (BAAAPCD) emission projections (Background) extend only to the year 1990 and due to the difficulty of quantifying pollutant emissions past 1990, the BAAAPCD 1990 background emissions and the Caltrans 1995 traffic projections are used in this analysis. This method is expected to result in somewhat conservative values for the pollutant emissions.

2.03 The daily trip ends (a trip end is the origin or destination of a trip; each trip thus consists of two trip ends) generated by the project-related traffic were calculated, using the projected development on the flood plain multiplied by the trip end generation factors developed by Caltrans (California Department of Transportation, 1974). The trip ends and trips generated by the projected development are shown on Table A-1.

2.04 The 1995 traffic volumes for the various links (roadways) shown in Table A-4 are based on projections developed by Caltrans (1977). The locations of these links are shown on Figure A-1. The project-related traffic was computed and assigned to the various links, based on Caltrans traffic projections and in accordance with methods outlined in the Transportation and Traffic Engineering Handbook (Institute of Traffic Engineers, 1976).

2.05 Due to the many uncertain factors associated with the proposed project, such as how developments are projected and how the Model Cities Plan would alter and add to the traffic pattern, meaningful estimates of vehicle-miles-traveled (VMT) and consequently the amounts of pollutants emitted are difficult to compute. In this analysis, therefore, the split of the project-related traffic among the categories shown in Table A-2 is based on the assumption that the traffic split in 1995 will be approximately the same as it is today in the area.

### 3.00 METHODOLOGY

3.01 The analysis of the air quality impact presented herein basically follows the methodology developed by the Bay Area Air Pollution Control District (BAAAPCD), as described in its Information Bulletin titled Guidelines for Air Quality Impact Analysis (Bay Area Air Pollution Control District, 1975). In accordance with the BAAAPCD guidelines, air quality impact computations were made for project-related pollutant emissions in terms of: (1) line source impact, i.e., pollutant concentration along and immediately adjacent to the most heavily traveled links (roadways) in the traffic circulation system in and around the project area; (2) area source impact, i.e., pollutant concentrations in the immediate air basin, a one-kilometer square area centered on the project site; and (3) regional impact, i.e., pollutant concentrations contributed by project-related emissions to the regional air basin.



FIGURE A-1

TABLE A-1  
DAILY TRIP END GENERATION BY PROJECT IN 1995

PROJECT SUB-AREA	DESCRIPTION	TRIP ENDS EACH	TRIP ENDS, TOTAL
Residential	225 Single-Family Units	10	2,250
Recreational	70 Daily Visitors	1/3	25
Total DTE =			2,275

Trip end generation values are from Caltrans  
(California Department of Transportation, 1974)  
2,275 trip ends = 1,138 trips

TABLE A-2  
VEHICLE-MILES TRAVELED (VMT)

TRIP PURPOSE	% OF TOTAL	NO. OF TRIPS	TRIP LENGTH	VMT
Home-Work	20	225	15 miles	3,375
Home-Shopping	15	169	10 miles	1,690
Home-School	10	113	5 miles	565
Home-Other	35	396	5 miles	1,985
Other-Other	<u>20</u>	<u>235</u>	5 miles	<u>1,175</u>
	100	1,138	Total VMT =	8,790 miles

TABLE A-3  
ROADWAY CAPACITY AND LINK NUMBERS 1/

LINKS INSIDE THE UTM GRIDSQUARE

L-1	North Richmond Bypass	Inside the UTM Gridsquare	12,000
L-2	3rd Street	Brookside-Market Ave	6,000
L-3	Pittsburg Avenue	N. Richmond Bypass-Central Ave	6,000
L-4	Central Street	Inside UTM Gridsquare	1,000
L-5	Market Avenue	3rd-Kelsey St	6,000
L-6	Central Street	Brookside-Pittsburg	1,000
L-7	3rd Street	Brookside-UTM Gridsquare Bdry	6,000

LINKS OUTSIDE THE UTM GRIDSQUARE

M-1	North Richmond Bypass	South of Parr Blvd	12,000
M-2	North Richmond Bypass	North of Parr Blvd	12,000
M-3	North Richmond Bypass	Gertrude-Castro	12,000
M-4	North Richmond Bypass	North of Gertrude	12,000
M-4A	North Richmond Bypass	South of Castro	12,000
M-5	Brookside Drive	Outside UTM Gridsquare	1,000
M-6	Market Avenue	Outside UTM Gridsquare	6,000
M-7	3rd Street	South of UTM Gridsquare	6,000
M-8	Parr Blvd	North Richmond Bypass-3rd St	6,000
M-9	Parr Blvd	3rd Street-Giant Road	6,000

1/ The location of the UTM Gridsquare and the links  
are shown on Figure A-1.

2/ Roadway capacities were either furnished by Contra Costa County,  
City of San Pablo or City of Richmond or estimated using criteria  
from the Transportation and Traffic Engineering Handbook, 1976  
(Institute of Traffic Engineers, 1976).

TABLE A-4  
TRAFFIC VOLUMES ON MAJOR STREETS  
IN AND NEAR NORTH RICHMOND

LINK NUMBER	CAPACITY	1995 TRAFFIC PROJECTIONS		
		WITHOUT PROJECT	PROJECT	TOTAL
LINKS INSIDE THE UTM GRID SQUARE				
L-1	12,000	18,529	471	19,000
L-2	6,000	884	116	1,000
L-3	6,000	400	398	800
L-4	1,000	30	71	100
L-5	6,000	10,145	155	10,300
L-6	1,000	30	71	100
L-7	6,000	375	25	400
LINKS OUTSIDE THE UTM GRID SQUARE				
M-1	12,000	11,900	100	12,000
M-2	12,000	11,887	113	12,000
M-3	12,000	18,029	471	18,500
M-4	12,000	18,529	471	19,000
M-4A	22,200	22,200	398	22,600
M-5	1,000	1,173	327	1,500
M-6	6,000	10,145	155	10,300
M-7	6,000	3,584	116	3,700
M-8	6,000	1,367	33	1,400
M-9	6,000	3,967	33	4,000

The "with" and "without" project traffic volumes are projections computed using the traffic volume totals developed by the California Department of Transportation (Caltrans). The computations and the assignment of traffic volumes to the various road segments were made according to the Transportation and Traffic Engineering Handbook (Institute of Traffic Engineers, 1976).

#### 4.00 LINE SOURCE ANALYSIS

4.01 The purpose of the line source analysis is twofold. First, it evaluates the probable impact of project-related emissions along the link (roadway) under investigation. Second, it evaluates the probable impact of project-related emissions upon points immediately downwind from the link. These points known as sensitive receptors are defined as buildings and areas where people would be spending more than two or three hours at a time (Bay Area Air Pollution Control District, 1975).

4.02 Carbon monoxide concentrations are used for the line source computations since, if the CO concentrations do not exceed the standards, it is improbable that the standards for the other pollutants would be exceeded.

4.03 To determine the concentrations of CO along the most heavily traveled roads, both inside and outside the UTM gridsquare, line source impact computations were performed for each link. The results of these computations are summarized in Table A-5. The concentrations were found to be relatively low and therefore the line source impact along the various links is considered insignificant. When comparing the highest values in the "project only" (pollutant emissions due to the projected development) and the "with project" (project-related emissions + the background emissions) categories with the Ambient Air Quality Standards, it was found that the concentrations would not have a significant impact upon the air quality. For the 1-hour averaging time, the highest "project only" and the highest "with project" concentrations would amount to only 0.2% and 9% of the standard, respectively. For the 8-hour averaging time, the highest "project only" and "with project" concentrations would amount to only 0.1% and 6% of the standard, respectively.

4.04 The line source impact analysis also involves an evaluation of the effect of project-related emissions upon sensitive receptors. In this analysis, computations of pollutant concentrations at distances of 10, 50, and 100 meters from the various links are used instead of actual receptors. The results of the computations are summarized in Table A-8 (1-hour averaging time) and Table A-7 (8-hour averaging time). The concentrations at sensitive receptors located 10, 50, and 100 meters from the road would in no case exceed 6% of the standard. The impact on sensitive receptors would therefore have to be considered insignificant.

TABLE A-5

LINE SOURCE IMPACT  
 CONCENTRATIONS AT ROADWAY: CARBON MONOXIDE 1995  
 (Units refer to the concentration in micrograms/cubic meter)

ROAD LINK	WITHOUT PROJECT		PROJECT ONLY		WITH PROJECT		TOTAL DAILY EMISSIONS GRAMS/DAY
	1-HOUR	8-HOURS	1-HOUR	8-HOURS	1-HOUR	8-HOURS	
L-1	3115	496	73	12	3188	508	91,884
L-2	147	24	20	3	167	27	3,510
L-3	67	13	67	12	134	25	2,208
L-4	6	1	11	2	17	3	414
L-5	1697	320	26	5	1723	325	14,214
L-6	196	37	55	10	251	47	5,796
M-1	3115	496	64	13	3179	509	16,302
M-2	1991	319	17	2	2008	321	77,688
M-3	3016	483	80	12	3096	495	64,935
M-4	2765	442	79	13	2844	455	25,194
M-4A	3715	594	66	11	3781	605	86,377
M-5	197	37	54	10	251	47	79
M-6	1697	320	26	5	1723	325	39,799
M-7	600	113	19	4	619	117	1,021
M-8	229	37	22	3	251	40	7,314
M-9	664	106	5	1	669	107	16,536

The standards for carbon monoxide concentrations are:

1-hour averaging time = 40,000 ug/m<sup>3</sup>

8-hour averaging time = 10,000 ug/m<sup>3</sup>

TABLE A-6

LINE SOURCE IMPACT  
 CONCENTRATION FOR 1-HOUR AVERAGING TIME  
 SENSITIVE RECEPTORS: CARBON MONOXIDE 1995  
 (Units refer to the concentration in micrograms/cubic meter)  
 (The standard for the 1-hour concentration = 40,000 ug/m<sup>3</sup>)

ROAD LINK	WITHOUT PROJECT DISTANCE IN METERS			PROJECT ONLY DISTANCE IN METERS			WITH PROJECT DISTANCE IN METERS		
	10	50	100	10	50	100	10	50	100
L-1	1,922	1,367	1,184	39	28	27	1,967	1,395	1,211
L-2	91	64	56	12	9	7	103	73	63
L-3	41	29	26	42	30	26	83	59	51
L-4	4	3	2	6	4	4	10	7	6
L-5	1,047	745	645	16	11	10	1,063	756	655
L-6	121	86	74	34	24	21	155	110	95
L-7									
M-1	1,922	1,367	1,184	39	29	24	1,961	1,396	1,208
M-2	1,228	874	757	11	7	6	1,239	881	763
M-3	1,861	1,324	1,146	49	35	30	1,910	1,359	1,176
M-4	1,706	1,214	1,051	49	35	30	1,755	1,240	1,081
M-4A	2,292	1,631	1,421	41	29	29	2,333	1,666	1,437
M-5	122	86	75	33	24	20	155	110	95
M-6	1,047	745	645	16	11	10	1,063	756	655
M-7	370	263	228	12	11	7	284	272	235
M-8	141	101	87	14	9	8	155	110	95
M-9	410	291	252	3	3	2	413	294	254

TABLE A-7

LINE SOURCE IMPACT  
 CONCENTRATION FOR 8-HOUR AVERAGING TIME  
 SENSITIVE RECEPTORS: CARBON MONOXIDE 1995  
 (Units refer to the concentration in micrograms/cubic meter)  
 (The standard for the 8-hour concentration = 40,000 ug/m<sup>3</sup>)

ROAD LINK	WITHOUT PROJECT			PROJECT ONLY			WITH PROJECT		
	10	50	100	10	50	100	10	50	100
L-1	279	186	157	6	5	4	285	191	161
L-2	13	9	8	2	1	1	15	10	9
L-3	7	5	4	7	4	4	14	9	8
L-4	1	T	T	1	1	1	2	1	1
L-5	180	120	101	3	2	2	183	122	103
L-6	21	14	12	5	4	3	26	18	15
L-7									
M-1	279	186	157	6	5	4	285	191	161
M-2	179	120	100	1	1	1	180	121	101
M-3	271	182	153	7	4	3	278	186	156
M-4	248	166	140	8	5	4	256	171	144
M-4A	334	223	188	6	4	3	340	227	191
M-5	21	14	12	5	4	3	26	18	15
M-6	180	120	101	3	2	2	183	122	103
M-7	63	42	36	3	2	1	66	44	37
M-8	21	14	12	1	1	1	22	15	13
M-9	60	40	33	0	0	0	60	40	33

## 5.00 AREA SOURCE ANALYSIS

5.01 The purpose of the area source analysis is to provide an indication of the probable impact of the project-related emissions on the air quality in the local area. The computations used in this analysis are designed to provide an estimate of annual averaged concentrations of various pollutants produced by project emissions and averaged spatially over the local area. In this analysis, the local area is defined as consisting of a one square kilometer grid which includes the project site and the most heavily traveled roads. This square kilometer, identified as 555,000 meters east and 4,201,000 meters north is based on the Universal Transverse Mercator (UTM) grid shown on the Oakland West Quadrangle, 7.5 Minute Series Topographic Sheet (U.S. Geological Survey, 1969). The location of the square kilometer grid is shown on Figure A-1.

5.02 Background emissions data for the year 1990, furnished by the BAAPCD were used for the area source analysis. The average vehicle speed was assumed to be 20 or 25 miles per hour, depending on the road, and with 3 minutes of idling time per trip. The area source analysis assumes a wind speed of 2 meters per second.

5.03 The area source impacts, summarized in Table A-8, are indicated as the maximum concentration of air quality standard related contaminants expected to occur during a single year as the result of project-related emissions. Impact calculations are based on simplified manual dispersion calculations and statistical techniques with conservative input values.

5.04 Table A-8 indicates that all pollutant concentrations except HC and SO<sub>2</sub> are well within the limits specified by the Ambient Air Quality Standards. The "with project" concentrations of non-methane hydrocarbons (HC) for the 3-hour averaging time, and of sulphur dioxide (SO<sub>2</sub>) for the 24-hour averaging time would exceed the respective Ambient Air Quality Standards. The background emissions data provided by the BAAPCD, shown in Table A-7, clearly indicates that the standards would be exceeded even without the addition of project-related emissions. The contribution of project-related emissions would amount to less than 0.5% of the total estimated 2,420 ug/m<sup>3</sup> of HC and less than 0.3% of the estimated 327 ug/m<sup>3</sup> of SO<sub>2</sub>.

## 6.00 REGIONAL IMPACT ANALYSIS

6.01 The regional impact analysis determines the impact of project-related emissions upon the air quality in the region. The results of the analysis, which are summarized in Table A-8, clearly show that the project-related emissions' impact on the region would indeed be minimal.

TABLE A-8

## AREA SOURCE AND REGIONAL AIR QUALITY IMPACTS FOR 1995

Contaminant	Air Quality Standard Averaging Time	Air Quality Standard (ug/m <sup>3</sup> )	Calculated Air Quality Impacts (ug/m <sup>3</sup> )			
			Area Source Impact		Total	Regional Impact
Background	Project					
Carbon Monoxide	1-hour	40,000	4,507	210	4,717	0.014
	8-hour	10,000	2,521	116	2,637	0.009
Non-methane hydrocarbons	3-hour (6-9 a.m.)	160	2,406*	14	2,420*	0.001
Nitrogen dioxide	1-hour	500	481	5	468	0.0007
	1-year	100	89	1	90	0.146
Sulfur dioxide	1-hour	1,306	580	2	582	0.0002
	24-hour	104	326*	1	327*	0.0001
	1-year	80	74	0	74	0.0365
Suspended particulate	24-hour	100	77	1	78	0.0001
	1-year	66	26	1	0	0.0365

Area source and regional air quality impacts are indicated in this Table as the maximum concentration of air quality standard related contaminants expected to occur during a single year as the result of project-related emissions. Impact calculations are based on simplified manual dispersion calculations and statistical techniques with conservative input values.

\* Indicates that concentrations are expected to exceed the standards.

## 7.00 VEHICLE MILES TRAVELED

7.01 Vehicle miles traveled is an important factor in air quality planning activities associated with the development of an Air Quality Maintenance Plan (AQMP) for the San Francisco Bay Area Air Basin. It is estimated that a total of 8,790 VMT would be generated due to project-related traffic. Using emission rates from the BAAPCD Guidelines for Air Quality Impact Analysis for the year 1990 (last year for which projections are available), a total of 12.6 kg/day of HC and 19.7 kg/day of NO<sub>x</sub> would be emitted as a result of project-related vehicle miles traveled.

## 8.00 MITIGATION MEASURES

8.01 The staff of the Environmental Protection Agency was contacted regarding possible mitigation measures to reduce the impact of the project-related emissions upon the air quality. EPA stated that mitigation measures that deal with methods to reduce the vehicle miles traveled that have been proposed by the Cities of Richmond and San Pablo and the County of Contra Costa in the Environmental Statement for the West Contra Costa Wastewater Treatment Plan would also apply for the Wildcat-San Pablo Creeks Project. The strategies for mitigation studies were:

- a. An increase in the roundtrip toll from \$0.75 to \$2.50 was examined for non-carpool use of the San Francisco-Oakland Bay Bridge during peak hours.
- b. Creating exclusive buslanes originating at a northerly point in the Hercules area along I-80 and proceeding through Berkeley to the point of the downtown Oakland exits on Hwy 17 and branching from I-80 onto the Bay Bridge.
- c. Providing bus service during peak hours to bring patrons from residential neighborhoods to the BART Station in Richmond.
- d. Limiting the project land use to create a phased development with slowed population growth in the Cities of Hercules and Pinole.
- e. Development/redevelopment along existing major transportation corridors in the Cities of Richmond and San Pablo.
- f. Expanding non-work trip oriented bus service consisting of the placement of new bus routes totally within the study area.
- g. Removal of all in-transit costs of bridge tolls and transit fares with revenues arising from an end-of-trip fee placed upon parking at work.

Such mitigation measures would reduce the vehicle miles traveled by "encouraging" people to switch to public transportation or car pooling by making such modes of transportation more attractive and convenient. These measures were evaluated singly and in combination in the Environmental Statement. Each mitigation strategy varies in the potential reduction of vehicle miles traveled and practicality in terms of capital cost and public resistance. Therefore, some of these strategies are more likely to be implemented than others.

SECTION 404 - DISPOSAL SITE EVALUATION

WILDCAT - SAN PABLO CREEKS  
CONTRA COSTA COUNTY, CALIFORNIA

APPENDIX B

PREPARED BY

U.S. ARMY ENGINEER DISTRICT, SAN FRANCISCO  
CORPS OF ENGINEERS  
SAN FRANCISCO, CALIFORNIA

NOVEMBER 1977



## APPENDIX B

### SECTION 404 - DISPOSAL SITE EVALUATION

#### TABLE OF CONTENTS

<u>Paragraph</u>	<u>Subject</u>	<u>Page</u>
1.00	INTRODUCTION	B-1
1.01	Authority	B-1
1.02	Purpose and Scope	B-1
1.03	Disposal Activities	B-1
1.04	Introduction of Section 404 Concerns	B-1
2.00	SITE #1 - RICHMOND LANDFILL	B-2
2.01	Description	B-2
2.02	Water Quality	B-2
2.03	Municipal Water Supply Intake	B-2
2.04	Shellfish Beds	B-3
2.05	Fish and Wildlife	B-3
2.06	Recreation	B-3
2.08	Sediment Quality	B-3
3.00	SITE #2 - FREETHY PROPERTY	B-3
3.01	Description	B-3
3.02	Water Quality	B-4
3.03	Municipal Water Supply Intake	B-4
3.04	Shellfish Beds	B-4
3.05	Fish and Wildlife	B-4
3.07	Recreation	B-5
3.08	Sediment Quality	B-5
3.09	Air Quality	B-5
4.00	SITE #3 - NORTH RICHMOND BYPASS	B-5
4.01	Description	B-5
4.02	Water Quality	B-5
4.03	Municipal Water Supply Intake	B-6
4.04	Shellfish Beds	B-6
4.05	Fish and Wildlife	B-6
4.06	Recreation	B-6
4.07	Sediment Quality	B-6
5.00	SITE #4 - NINOMIYA NURSERY	B-6
5.01	Description	B-6
5.02	Water Quality	B-6
5.03	Municipal Water Supply Intake	B-7

TABLE OF CONTENTS  
(Cont'd)

<u>Paragraph</u>	<u>Subject</u>	<u>Page</u>
5.04	Shellfish Beds	B-7
5.05	Fish and Wildlife	B-7
5.06	Recreation	B-7
5.07	Sediment Quality	B-7
6.00	SITE #5 - RICHMOND ROD AND GUN CLUB	B-7
6.01	Description	B-7
6.02	Water Quality	B-7
6.03	Municipal Water Supply Intake	B-7
6.04	Shellfish Beds	B-7
6.05	Fish and Wildlife	B-8
6.06	Recreation	B-8
6.07	Sediment Quality	B-8
6.08	Air Quality	B-8
7.00	SITE #6 - ASAHI NURSERY	B-8
7.01	Description	B-8
7.02	Water Quality	B-8
7.03	Municipal Water Supply Intake	B-8
7.04	Shellfish Beds	B-8
7.05	Fish and Wildlife	B-9
7.07	Recreation	B-9
7.08	Sediment Quality	B-9
7.09	Air Quality	B-9
8.00	SITE #7 - WILSON PROPERTY	B-9
8.01	Description	B-9
8.02	Water Quality	B-10
8.04	Municipal Water Supply Intake	B-10
8.05	Shellfish Beds	B-10
8.06	Fish and Wildlife	B-10
8.08	Recreation	B-11
8.09	Sediment Quality	B-11
9.00	SITE #8 - ALBANY WATERFRONT PROJECT	B-11
9.01	Description	B-11
9.02	Water Quality	B-11
9.05	Municipal Water Supply Intake	B-12
9.06	Shellfish Beds	B-12
9.07	Fish and Wildlife	B-12
9.09	Recreation	B-12
9.10	Sediment Quality	B-12

TABLE OF CONTENTS  
(Cont'd)

<u>Paragraph</u>	<u>Subject</u>	<u>Page</u>
10.00	SITE #9 - HOFFMAN FREEWAY	B-13
10.01	Description	B-13
10.03	Water Quality	B-13
10.04	Municipal Water Supply Intake	B-13
10.05	Shellfish Beds	B-13
10.06	Fish and Wildlife	B-13
10.09	Recreation	B-14
10.10	Sediment Quality	B-14
10.11	Air Quality	B-14
11.00	DISPOSAL ACTIVITIES	B-14
11.01	General	B-14
11.02	Impacts of Transporting Excavated Material on 404 Concerns	B-15
12.00	EVALUATION	B-15
12.01	Summary	B-15
12.02	Conclusions	B-15

REFERENCES

PLATES

<u>Number</u>	<u>Title</u>
B-1	Potential Disposal Sites Adjacent to Project
B-2	General Location of Disposal Sites
	Outside the Project Area
B-3	General Location of Disposal Sites
	Outside the Project Area

TABLES

<u>Number</u>	<u>Title</u>
B-1	Section 404 Concerns



APPENDIX B  
SECTION 404 - DISPOSAL SITE EVALUATION

1.00 INTRODUCTION

1.01 Authority. Federal regulations implementing the Federal Water Pollution Control Act (FWPCA) of 1972, Section 404 action are applicable to Civil Works projects. The following evaluation has been conducted for the authorized Wildcat and San Pablo Creeks, Contra Costa County, California, water resources development to address these regulations.

1.02 Purpose and Scope. The Corps of Engineers is required to review concerns for water quality and related aspects, determine whether there was ample opportunity for the public to fully express its views on these concerns, and determine if these concerns are resolved to the satisfaction of the District Engineer. This appendix is a step in addressing these requirements by assessing the impacts of the alternative disposal activities on water quality and related aspects. Coordination of this document will allow the public an opportunity to express its views.

1.03 Disposal Activities. Channel excavation will result in the displacement of about 380,000 cubic yards of material. Approximately 230,000 cubic yards would be excavated from San Pablo Creek and 150,000 cubic yards from Wildcat Creek. Several potential disposal sites where material to be removed from both Creeks might be deposited were proposed by the Contra Costa County Flood Control and Water Conservation District. The locations of these areas are depicted on Plates B-1, B-2 and B-3.

1.04 Introduction of Section 404 Concerns. Section 404 concerns are specifically related to disposal or discharge of dredged or fill material in "navigable waters of the United States." The term "navigable waters" as defined by the FWPCA of 1972 includes:

a. Coastal waters that are navigable waters subject to the ebb and flow of the tide shoreward to their mean higher high water mark (on the Pacific Coast).

b. All coastal wetlands, mudflats, swamps, and similar areas that are contiguous or adjacent to other navigable waters. 'Coastal wetlands' include marshes and shallows and means those areas periodically inundated by saline or brackish waters and that are normally characterized by the prevalence of salt or brackish water vegetation capable of growth and reproduction.

1.05 Other categories of the definition are not applicable to potential disposal activities of this civil works project. Six of the potential disposal sites located within the project area can be categorized as areas contiguous to wetlands or mudflats. Although evaluation of the Section 404 concerns are basically related to these six sites, all nine potential sites are discussed to provide a valid comparison of alternatives.

## 2.00 SITE #1 - RICHMOND LANDFILL

2.01 Description. The Richmond Sanitary Landfill site (see Plate B-1) is located along the waterfront of San Pablo Bay between San Pablo Creek to the northeast and Wildcat Creek to the south. It encompasses 350 acres; however, the area considered as a disposal site for the project includes only the 200 acres that have already experienced sanitary landfill. This area has a capacity for about 380,000 cubic yards of material. The site was a viable marsh before the fill occurred, but now is a typical sanitary landfill site (mostly barren exposed dirt and/or refuse, and supports a small animal population). This landfill, designated as Class IIA, provides protection to water quality from "Group 2 and 3 Wastes." Group 2 wastes are chemically or biologically decomposable, nontoxic and would not reduce the quality of usable waters. Group 3 wastes are nonwater soluble, nondecomposable, and inert solids. A Class I pond for toxic wastes is also within the site boundaries (1).

2.02 Water Quality. Construction of containment dikes and permanent sealing of the disposal area would prevent possible runoff or leaching from the disposal site into surrounding tidelands (2). Retention dikes have been constructed enclosing the Class I pond to comply with the San Francisco Bay Regional Water Quality Control Board Order 76-28 (1). The diked area also includes the Class IIA area being considered as a disposal site for the proposed project.

2.03 Municipal Water Supply Intake. Placement of disposal material on this site would not affect the municipal water supply of the Richmond area, due to the dependence of the local community on surface water, not groundwater, for its water supply (3). The landfill site and other disposal sites within the project area in the lower reaches of both Wildcat and San Pablo Creeks are located, however, in an aquifer area that may be utilized as an emergency source of water (4). Apparently, the groundwater aquifer is located at depths ranging from 80 feet to more than 180 feet in the landfill site, and subsurface seepage to usable groundwater supplies is remote. Historical wells in lowland areas, west of the railroad tracks, have depended on strata in the 200-foot range to obtain potable supplies (1).

2.04 Shellfish Beds. The U.S. Fish and Wildlife Service does not object to placement of fill on the portions of the site that have already been filled, and which are being considered as a disposal area for the proposed project. The habitat of the shellfish has already been eliminated, so no adverse effect would be experienced from further disposal upon the area previously filled.

2.05 Fish and Wildlife. Fishery and wildlife resources are of high value in the surrounding area, but the filled portion of the site has been altered drastically by man's activities. Topsoil is pushed over the refuse as it is deposited at the edge of the fill, but behind the active dump, vegetative growth is being established. As a result, various animals are moving into this area. Many gulls are seen flying over the refuse site and feeding. Personnel of the U.S. Fish and Wildlife Service have informally indicated that they would not object to more fill being placed here, as cover material (5). This activity would increase the upland habitat available for wildlife.

2.06 Recreation. Staff members of the Fish and Wildlife Service have recommended that this site (the portion already filled) be converted, as soon as possible, to a public park, and that foot and bike trails be constructed along the San Pablo Bay front of the proposed park and adjacent tideland areas. The East Bay Regional Park District is in the process of developing a regional park on top of the filled portion of the site, and bicycle and pedestrian trails from San Pablo Ridge to the Bay Shoreline, and from there north to Point Pinole Park.

2.07 Placing disposal material on the filled portion of the site would not have an adverse effect on recreational activities, which include fishing and hunting. In fact, using the disposal material as cover material on this part of the sanitary landfill site and building a park on top of the fill, would have a beneficial impact on recreational opportunities for the East Bay Area and North Richmond (1).

2.08 Sediment Quality. Sediment analysis would not be required if adequate assurance is given that no leaching or runoff would occur into adjacent areas. Previous construction of retention dikes would restrict movement of leachate into adjacent tidelands.

### 3.00 SITE #2 - FREETHY PROPERTY

3.01 Description. The Freethy Property (see Figure B-1) encompasses 60 acres on the shoreline of San Pablo Bay, immediately south of the Richmond Rod and Gun Club and north of San Pablo Creek. The eastern portion of the site consists of alluvial formations (a fine grained silt and clay) and supports typical grasses of the S.F. Bay Area. The western part of the site is composed of tidelands supporting salt marsh vegetation (cord grass and pickleweed), and mudflats. Between these two areas lies the area that was haphazardly filled to elevations mostly

below MHHW (2). The fill is composed of variable amounts of clay, silt, sand, gravel, and concrete and brick rubble (6). The site has a capacity for an additional 380,000 cubic yards of material.

3.02 Water Quality. Placement of fill in the wetlands in S.F. Bay in a piecemeal fashion has reduced the tidal prism, and has thereby caused the movement of the fresh-salt water interface in the bay system. Disposal of excavated material in the wetlands would further reduce the tidal prism by an imperceptible amount, however, the cumulative effect of disposal in these wetlands is significant. Cutting off this site from tidal circulation would reduce the capacity for intertidal storage and would change and/or reduce current velocities; both processes would result in changes in shoaling, sedimentation and erosion patterns in San Pablo Bay. The drainage system of the marsh complex would also be adversely affected (2). There would be a significant impact on water quality considerations from the disposal of material. Containment dikes would also be required to prevent leaching of the disposal material into the surrounding tidelands.

3.03 Municipal Water Supply Intake. No impact on water supply is expected. However, the site is in an aquifer recharge area and the groundwater should be protected for emergency use (4) (refer to paragraph 2.03).

3.04 Shellfish Beds. Placement of fill on the marsh and mudflats on this site would have an adverse effect on shellfish in adjacent areas as well as within the site boundaries. Smothering of the shellfish and other benthic invertebrates, such as nematodes & polychaetes, would be lethal. Also, filter feeders, especially clams, depend on the organic material and nutrients (food) washed from the marshlands by the tidal currents. Destruction of the portions of the marsh on this site would reduce the food supply for shellfish in adjacent areas (2).

3.05 Fish and Wildlife. The marsh and mudflats in the Wildcat-San Pablo Creek marsh complex support 100 species of fish, including important anadromous fisheries such as striped bass, 70 species of waterbirds, including the fall migration of birds in the Pacific Flyway, and a variety of small mammals, woodland birds and other animals. These marshes and mudflats when combined with other similar areas in San Francisco Bay are of extremely vital importance to the food chain in the San Francisco Bay system and also to coastal areas outside the San Francisco Bay. Five endangered species are found in this area: California clapper and black rails, Salt marsh harvest mouse, Samuel song sparrow, and California brown pelican (7).

3.06 Fill placed on the already filled portion of this site would have a minor impact on fish and wildlife. However, placement of disposal material on the marsh and mudflats within the site would have a significant adverse effect on fish and wildlife in the project area and also in the San Francisco Bay system (5).

3.07 Recreation. Destruction of this part of the marsh complex and mudflats would reduce the benefits that people locally and in the Bay Area receive, such as fishing, hunting, birdwatching and other activities related to the San Francisco Bay resources. The East Bay Regional Park District (EBRPD) is planning a regional trail system that would link the Wildcat-San Pablo Creek marsh complex with Point Pinole Park to the north. The Contra Costa County Dept. of Education, BCDC, East Bay Regional Park District and all major citizen conservation groups consider this marsh complex important for preserving wildlife as well as for educational purposes (8). Fill placed here would have a significant adverse effect on existing and potential recreational values.

3.08 Sediment Quality. Further consideration of this site would require qualitative sediment analysis of the material to be excavated from the channels. Sediment analysis would provide additional data that is necessary in order to evaluate the impact of the disposal activities on the marsh and mudflat areas. Construction of containment dikes would be required to minimize adverse affects upon adjacent water quality. If this disposal site is considered further, sediment analysis and containment dikes would be required.

3.09 Air Quality. The cumulative air quality impact of filling the marshland in a piecemeal fashion is an important factor. According to the Bay Conservation and Development Commission (BCDC), filling of substantial parts of the Bay would result in man-made changes that could significantly affect the climate of the Bay Area. Briefly, filling of substantial parts of the Bay would: (a) reduce the distance inland that cool, summer breezes blew, and reduce wind speeds in the area where the fill occurred, (b) raise the temperatures in summer and lower them in winter, (c) increase smog, and (d) increase winter fogs in the San Francisco Bay Area (9). Marshes also play a role, the extent of which is still undetermined, in converting carbon monoxide, a highly toxic compound, into carbon dioxide, a nontoxic one (9).

#### 4.00 SITE #3 - NORTH RICHMOND BYPASS

4.01 Description. The site for the Contra Costa County North Richmond Bypass Project (see Figure B-1) is located to the northwest of North Richmond and could accommodate 100,000 cubic yards of material. It extends directly south from Parr Boulevard to Gertrude Street, crossing both San Pablo and Wildcat Creeks. Land use in this area includes salvage/wrecking yards, vacant lots, and nurseries. A large vacant lot in the northern section of the site is higher than the adjacent road elevation and is densely vegetated with native grasses and flowering plants. A fairly abundant bird population was observed, including red-winged blackbirds, and other upland species.

4.02 Water Quality. Precautions would be taken during construction activities, if this site is utilized, so that a minimal amount of sediment finds its way into the creek systems; and from there, into the

marsh complex. A lack of taking these precautions would result in an adverse impact on the Wildcat-San Pablo Creek marsh through increased sedimentation rates. The North Richmond Bypass entails crossing both Wildcat and San Pablo Creeks. Since the creek crossings would be within the limits of the Corps of Engineers' proposed project, the method of crossing the creeks must be compatible with the project.

4.03 Municipal Water Supply Intake. No impact is expected to occur on the municipal water supply (refer to paragraph 2.03).

4.04 Shellfish Beds. Since the project is above MHHW, disposal would not have a direct effect on shellfish beds. Precautions, as described in paragraph 4.02, would be taken to prevent excess sediment from entering Wildcat and San Pablo Creeks.

4.05 Fish and Wildlife. Placement of fill material on this site would displace the birds and small animals living on portions of the site. This impact would be minor, and similar in scope to that of Site #4, Ninomiya Nursery. There would most likely be secondary impacts associated with construction of the bypass project. At this time, there isn't any information available describing the extent of these impacts, since specific plans have not been developed by the County Public Works Department (10).

4.06 Recreation. Placing fill on this site would not have an impact on recreation opportunities, as long as the bypass did not interfere with the proposed regional trail system along Wildcat and San Pablo Creeks.

4.07 Sediment Quality. Sediment analysis would not be required if appropriate precautions are taken to insure prevention of excessive sedimentation.

## 5.00 SITE #4 - NINOMIYA NURSERY

5.01 Description. The Ninomiya Nursery (see Plate B-1) is located near Verde School in North Richmond. The site, about 7 acres, is a fenced, vacant lot adjacent to the nursery, at the southeast corner of Third Street and Brookside Drive, with an elevation slightly lower than that of adjacent roadways. It would accommodate about 30,000 cubic yards of material. There is a fairly sparse growth of upland grasses on the site, which may be used by transient and/or nocturnal wildlife species.

5.02 Water Quality. Placing fill material on this site would not have an adverse impact on water quality, due to the fact that the area is above MHHW, and is not bounded by any waterways. The site is only slightly below the present road level and elevating the land surface above the roadway may cause drainage problems.

5.03 Municipal Water Supply Intake. An adverse impact on the municipal water supply is not anticipated (refer to paragraph 2.03).

5.04 Shellfish Beds. Since the site is not located near or in a wetland area, placing fill here would not have any impact on shellfish resources.

5.05 Fish and Wildlife. There is a moderate growth of upland-type vegetation on the site, which is probably inhabited by small animals and transient and migratory birds. Land use on adjacent areas includes the Ninomiya Nursery to the east, Verde School to the southeast and other vacant lots, nurseries and light industry. Activities from these land uses already disturb wildlife to some extent in the area. Filling in this site would displace all wildlife species living on the site and would limit use by transient species. The impact of filling this site would be more severe, if it were not for the existence of other nearby vacant lots available for wildlife use. Changes in land use which might occur if the site is filled, may cause some secondary impacts on wildlife resources.

5.06 Recreation. Placement of fill on this site would not have a significant impact on recreation opportunities for people in the area. The site is neither a wetland area, nor a highly productive habitat.

5.07 Sediment Quality. Qualitative analysis of the excavated material would not be required, since there is no or little potential chance that the material would leach into a waterway or would affect water quality.

## 6.00 SITE #5 - RICHMOND ROD AND GUN CLUB

6.01 Description. The Richmond Rod and Gun Club (see Plate B-1) is located on the San Pablo Bay Shoreline, north of Site #2 and San Pablo Creek and could accommodate approximately 100,000 to 200,000 cubic yards of material. The great majority of the 50-acre site consists of mudflats; a small portion thereof includes the Club's pier. The mudflats support a variety of shellfish and other fisheries and waterfowl.

6.02 Water Quality. The adverse effect of fill on this site, which is primarily mudflats, would be similar in nature but greater in extent than that for the Freethy Property as discussed in paragraph 3.02.

6.03 Municipal Water Supply Intake. There would be no impact on the local water supply (refer to paragraph 2.03).

6.04 Shellfish Beds. Disposal of fill material on this site, which is primarily mudflats, would have a significant adverse effect on shellfish within the property limits as well as in San Pablo Bay (refer to paragraph 3.04).

6.05 Fish and Wildlife. Placement of disposal material in the mudflats on this site would have a very significant impact on fish and wildlife in the Wildcat-San Pablo Creek marsh complex and San Pablo Bay (5) (refer to paragraph 3.05).

6.06 Recreation. Placement of fill on the mudflats on this site would reduce the benefits related to fishing, hunting, bird watching and other activities that people in this area receive from the bay (2). The trail system that EBRPD is planning between the Wildcat-San Pablo Creek marsh and Point Pinole Park would skirt this site. Therefore, fill placed here would be aesthetically unpleasing and would reduce the value of potential recreational opportunities for this area.

6.07 Sediment Quality. Similar requirements to those discussed in paragraph 3.08 to address sediment quality would be necessary in the event that this site is considered further.

6.08 Air Quality. According to BCDC, piecemeal filling of the shallow mudflat areas in San Francisco Bay would have adverse effects on air quality as described in paragraph 3.09.

## 7.00 SITE #6 - ASAHI NURSERY

7.01 Description. The Asahi Nursery (see Plate B-1) is situated on the old flood plain of San Pablo Creek at the northwest corner of Parr Boulevard and Garden Tract Road, just to the east of the terminus of the flood control project. The area, encompassing 5 acres, could accommodate about 25,000 cubic yards of material. The site supports grasses and brush, as well as several greenhouses and small buildings. Transitory wildlife may frequent the site.

7.02 Water Quality. In order to prevent leaching of the excavated material into San Pablo Creek and the adjacent marsh, some type of containment dike would probably be required. Due to the fact that this site is above MHHW, placing fill on this site would not affect the circulation or drainage system of the nearby salt marsh.

7.03 Municipal Water Supply Intake. No impact is expected to occur on the municipal water supply (refer to paragraph 2.03).

7.04 Shellfish Beds. Since this area does not contain wetland or mudflat areas, placement of disposal material on this site would not have any direct effect on shellfish resources. If containment dikes are constructed, as mentioned in paragraph 7.02 above, potential indirect impacts upon adjacent mudflats would be eliminated.

7.05 Fish and Wildlife. Placement of fill material on this site would have a minor impact on fish and wildlife resources. Land uses on adjacent areas include light industry, vacant lots, which have experienced some sort of landfill, and light traffic use. These land uses already disturb fish and wildlife to some extent. Since this site is located near a large marsh, its importance to wildlife for shelter is probably greater than a more inland site, such as sites #3, 4, or 7 (4). The area may be used by transient and nocturnal animals, which would be more severely affected by this fill, if other vacant and upland brush-type areas were not readily available for their use.

7.06 The vegetation on the site is important for maintaining air spaces and soil organisms necessary for a healthy soil. Covering the site with fill material would remove the existing vegetation. Changes in land use which might occur if the site is filled may alter the character of the site and degrade its use as open space. This effect would be minimized by replanting, preferably with native vegetation, over areas not being utilized after the fill is completed (11).

7.07 Recreation. The site is designated as "parks" in the North Richmond San Pablo Bay Study and as open space in the Open Space Conservation Plan. A "public observation and interpretive center" is proposed for this general area (8). Placement of fill material on this site would significantly degrade its potential use for recreation unless replanted as previously described.

7.08 Sediment Quality. Sediment analysis and containment dikes would be required if this site is considered further.

7.09 Air Quality. If the site is not planted or otherwise becomes revegetated immediately following fill activities, there may be a minor impact on air quality. Vegetation in general is important for maintaining environmental quality by reducing wind velocities, moderating extreme temperatures and humidity, intercepting rainfall (preventing earth compaction and excess runoff), adding oxygen to the atmosphere, and by neutralizing certain air pollutants (11).

## 8.00 SITE #7 - WILSON PROPERTY

8.01 Description. The Ralph Wilson Property (see Plate B-2) consists of three parcels located on Appian Way, 150 yards east of Interstate 80 in the El Sobrante Hills area, within the city limits of Pinole. The western and eastern sides of the site, about 10 acres in size, slope toward a small drainage course, which runs from north to south along the western boundary of the site and empties into San Francisco Bay. Roughly one-third of the site has already been filled with dirt and rubble and is devoid of vegetation. The remainder of the site is open pasture and may support rodents, meadow-nesting birds, predatory birds and mammals (11). Present land use on adjacent parcels includes some single-family

dwellings but is primarily pasture/agricultural land, some of which is vacant. The area is zoned for commercial development and could accommodate about 100,000 cubic yards of material (12).

8.02 Water Quality. Placing fill on the three parcels of this site may have a minor impact on water quality in San Francisco Bay. A small drainage course runs along one side of the site towards the bay. Indiscriminant filling of this drainage course would cause problems with local drainage, stability of the fill, and possible contributions to increased sedimentation rates in San Francisco Bay (9). The means of placing fill over the drainage course, such as over a culvert, would be designed using the best soil conservation practices in order to minimize erosion (11). The site would be replanted as soon as possible, preferably using native plants (11).

8.03 Sediment analysis of the material from the channels of Wildcat and San Pablo Creeks would be required prior to placement of the fill in order that potential adverse effects can be identified. If adverse effects would occur, they would be minimized by application of good soil conservation practices.

8.04 Municipal Water Supply Intake. The fill activity would not have any impact on the municipal water supply (13).

8.05 Shellfish Beds. A sudden accumulation of sediment in the bay from the fill site, that might occur after a storm, would smother shellfish and other animals living on the bottom (9). Increased sedimentation of the bay would reduce the mudflat habitat for shellfish (9). These impacts would be minimized by employing soil conservation practices.

8.06 Fish and Wildlife. Placing excavated material on this site would have a fairly minor impact on fish and wildlife resources. The drainage course is too small to support a fishery; however, an increased sedimentation rate into the bay could have a minor adverse impact on bay fisheries (9). This problem could be avoided if proper methods are used during and after construction to minimize erosion into the drainage course.

8.07 Roughly one-third of the site has been filled and is void of any vegetation or wildlife. The remainder of the property is open pasture with annual grasses, and may support some small mammals, rodents and upland birds. The area may also be used by transient and/or nocturnal wildlife, which would be more severely affected by this fill, if it were not for the existence of vacant areas for their use in the surrounding area. There would probably be a secondary impact on wildlife caused by possible development of the site into a motel (12).

8.08 Recreation. Putting the fill material on this site would not have any impact on recreational opportunities for this area. The parcels are zoned for low density residential use, are located adjacent to a commercially-zoned area, and do not encompass unique or rich wildlife habitats (12).

8.09 Sediment Quality. Qualitative analysis of the fill material would be required, since the site encompasses a drainage course, leading into the bay. Some means of accommodating the drainage course would be necessary to protect water quality.

## 9.00 SITE #8 - ALBANY WATERFRONT PROJECT

9.01 Description. This site, (see Plate B-3) a landfill extending two-third of a mile west of the parking lot of Golden Gate Fields into the San Francisco Bay, is located immediately south of Point Isabel in the city of Albany. The site is barren, except for a small amount of vegetation on the northern side of the peninsula, and represents impoverished conditions for birds and other wildlife (14). The landfill comprises 109 acres and would require an additional 3.5 acres of fill to seal and cap the site. It has a capacity for roughly 50,000 to 100,000 cubic yards of material. A park/marina complex has been proposed by the city of Albany for the landfill, and the marina would need an additional 7.3 acres of fill (14).

9.02 Water Quality. The Albany Waterfront Project has been required by several regulatory agencies to use an impermeable clay material to seal and cap its landfill site (14). This would prevent: penetration of water into the site, leaching of pollutants from the site into the surrounding bay waters and escape of gases into the atmosphere (14). Between an outer protective concrete rubble dike and the slopes of the fill would be placed a "filter membrane" and a five foot-wide wedge of impermeable material, such as dredged material from the proposed marina project.

9.03 This impermeable material would also form an envelope around the slopes, which are presently very steep and require stabilization. The excavated material from Wildcat and San Pablo Creeks would be used on top of the cap, in order to create soil for landscaping purposes (14). The nature and extent of effects upon water quality is related to sediment quality and potential runoff entering Bay waters (refer to paragraph 9.10).

9.04 Following completion of the landfill, the site may be developed into a park-marina complex by the city of Albany. Information on the impacts of this proposed waterfront project is available in the Planning and Feasibility Study and Draft EIR on Albany Waterfront (14).

9.05 Municipal Water Supply Intake. Placement of additional fill on the site would not have an adverse impact on the municipal water supply of the East Bay Area (13).

9.06 Shellfish Beds. The adverse impact of placing fill around the perimeter of the site, in order to seal the site, on shellfish and other invertebrates would be minor. The above action would actually benefit shellfish, since it would prevent leaching of pollutants from the site into the surrounding benthic environment (14). Use of concrete rubble as riprap to stabilize the fill would increase the habitat for shore invertebrates and shellfish, which require a hard substrate, such as mussels (14). The impact of the proposed marina on shellfish resources is discussed in the Draft EIR, Albany Waterfront (14).

9.07 Fish and Wildlife. The landfill is mostly barren, and supports some upland-type vegetation, such as mustard, pigweed, fennel, dandelion, and broom, on the northern end of the peninsula. The site supports an impoverished wildlife population. Norway rats, house mice, California ground squirrel and sea gulls are the most common wildlife forms on the site. Shorebirds and ducks can be seen near the edge of the site. Using the fill material as a cap followed by landscaping of the area for a park would improve the habitat for terrestrial wildlife (14).

9.08 The waters around the landfill are rich with a variety of fish species (14). Utilizing the excavated material for capping and sealing the landfill would not have a significant adverse effect on fisheries. The potential water quality, as a result of sealing the landfill site, may have a beneficial impact on local fish resources (14). As mentioned in paragraph 9.04 the site may be developed into a park-marina complex. The impacts of a marina on fish and wildlife are discussed in detail in the Draft EIR for the Albany Waterfront (14).

9.09 Recreation. Reduction of open space through building various structures on top of the fill and reduction of the bay by completing the fill are impacts on aesthetics. However, completion of the landfill as a park-marina complex would improve the recreation opportunities for residents of the East Bay, since this project, within an 18-minute drive of most of East Bay communities, would provide a variety of activities (14).

9.10 Sediment Quality. Runoff from the site could possibly enter surrounding bay waters. Since the excavated material from the proposed project would be placed on top of the cap, sediment analysis of the material would be required to evaluate potential impacts on water quality. Sediment analyses would be performed unless measures are taken to prevent the runoff from entering adjacent waters of the Bay.

## 10.00 SITE #9 - HOFFMAN FREEWAY

10.01 Description. The site of the Hoffman Freeway Project (see Plate B-3) is located along Hoffman Boulevard and Highway 17 between Buchanan Street in Albany and South 47th Street in Richmond and follows the eastern shoreline of San Francisco Bay. To the west and parallel with Hoffman Boulevard at the Albany/Richmond boundary lies the Hoffman salt marsh and mudflats. The marsh is partially enclosed by dikes, but does receive tidal circulation and some freshwater inflows. This unique area along the East Bay Shoreline supports a dense growth of salt marsh vegetation, productive mudflats and a great variety and quantity of shorebirds and waterfowl.

10.02 Six different alternative proposals exist for the expansion of Highway 17 along Hoffman Boulevard and the reconstruction of the interchange with Highway 80. Approximately 400,000 cubic yards of excavated material could be used for road fill across the mudflat and embankments in several of the alternatives.

10.03 Water Quality. The combination of placement of fill near or in the marsh/mudflat area and construction activities would increase the turbidity of the water and cause resuspension of deposited sediment and contaminants. It may also increase the local sedimentation rate in adjacent areas in the bay. The expansion of Highway 17 would have secondary impacts on water quality and these are discussed in the Marine Environmental Impact Analysis of the Hoffman Freeway Project (15). Containment dikes may be required to prevent resuspension of the excavated material.

10.04 Municipal Water Supply Intake. Placement of fill material would not have an adverse impact on the municipal water supply. The East Bay depends on runoff and import from the Sierras, not ground water, for its water supply (13).

10.05 Shellfish Beds. The mudflats on this site support an abundant and diverse population of shellfish and other invertebrates. The area has a very high productivity which is partly due to the available detritus formed from pickleweed and cord grass in the adjacent salt marsh. Placement of fill material on the mudflats or marsh would have a significant adverse effect on the shellfish and other biota that live in, and depend on, the mudflats (2, 15).

10.06 Fish and Wildlife. The dominant plant forms in the marsh are pickleweed and cord grass, however, 17 species of flowering plants associated with a marsh are found there as well as 19 species of upland-type vegetation on the dikes and filled areas. The salt marsh is a viable, fertile and dynamic marsh in the "mature" stage of development (15).

10.07 The Hoffman salt marsh and mudflats are used as feeding, breeding, rearing and roosting areas by a very large number and variety of shorebirds and waterfowl, including resident and migratory birds. During high tides, the birds move to the more sheltered upland areas adjacent to the marsh. At least five rare or endangered animals are known or expected to frequent the site: Black Rail, California Brown Pelican, California Clapper Rail, California Least Tern and Salt Marsh Harvest mouse. This salt marsh/mudflat area ranks as one of the highest shorebird use areas in the State (15). The site is also inhabited by many small mammals, rodents such as voles, lizards and amphibians.

10.08 The mudflats on this site are important feeding and spawning grounds for a diverse fish population, such as flatfish, striped bass, skates, topsmelt, saltwater perch and herring (15). Placement of fill material on the mudflats or marsh, associated with several of the alternatives for the freeway project would have a very significant adverse impact on the fish and wildlife resources on the East Bay shoreline of the bay and also in the bay as a whole.

10.09 Recreation. Destruction of this marsh/mudflat would reduce the benefits related to fishing, hunting, birdwatching, and other resources based activities. The mudflats on this site are heavily used by fisherman. If the area is left intact, the salt marsh/mudflat might be annexed into the East Bay Regional Park System, causing a significant effect on recreation (15).

10.10 Sediment Quality. To minimize adverse effects upon adjacent water quality, construction of containment dikes would be required. Sediment analysis would be required.

10.11 Air Quality. Filling in more of the marshlands and mudflats of San Francisco Bay would have an adverse effect on air quality in the San Francisco Bay Area (refer to paragraph 3.09).

## 11.00 DISPOSAL ACTIVITIES

11.01 General. Channel excavation and related construction will result in the displacement of about 380,000 cubic yards of material. Approximately 80 percent of this total material, 300,000 cubic yards, is to be removed from the lower reaches of both creeks (roughly one and a half miles from the downstream end of the project). At this time, transportation of excavated material to the disposal site is expected to be accomplished by truck. It is conceivable that a pipeline can be designed to accommodate the transportation of excavated waste material from the lower reach of San Pablo Creek to the Richmond Sanitary Landfill. It is also conceivable that a conveyor belt might be used.

11.02 Impacts of Transporting Excavated Material on 404 Concerns.

Noise and construction activity associated with loading and transporting the material by truck would have a minor disruptive effect on vegetation and wildlife adjacent to the project site. This would be of particular concern at the extreme lower reaches of the project in both creeks, where the project borders a viable and important marsh. This marsh is utilized heavily in the fall and winter months by ducks and other waterfowl in the Pacific Flyway. Transport of the excavated material would take place in the late spring and summer months, if feasible, to minimize disruption.

11.03 In the event pipelines are required to transport excavated material to disposal areas, the location of pipeline routes would be adequately evaluated prior to implementation to minimize possible adverse effects upon portions of the adjacent wetland complex.

12.00 EVALUATION

12.01 Summary. The detailed discussion of Section 404 concerns for each potential disposal site mentioned above has been displayed in summary table form for comparison purposes. (Refer to Table B-1.) Other considerations that were acknowledged include the estimated capacity of each site and the availability of the site during actual construction activities. Sites 1, 2, and 9 each have adequate capacity to act as single disposal sites. Presently, sites 3, 6, 7, 8 and 9 are not confirmed for the scheduled construction period, which is scheduled to start in 1980.

12.02 Conclusions. In order that the Wildcat and San Pablo Creeks water resources project does not violate environmental statutes or local or regional plans, the disposal sites adversely affecting wetland areas were eliminated from consideration. Based on the evaluation of impacts, the Richmond Sanitary Landfill site was selected since it would have no significant adverse impacts on water quality, water supply, shellfish beds, fish and wildlife, recreation, sediment quality or air quality while at the same time providing adequate capacity for dredged material disposal.



TABLE B-1 - SECTION 404 CONCERNS

## SUMMARY TABLE

Site	Water Quality	Water Supply	Shellfish Beds	Fish and Wildlife	Recreation	Sediment Quality	Air Quality
1	No effect if area properly sealed	Potential secondary effect	No effect	Cover material would be beneficial over long term	Future use as park would be beneficial	Analyses not required if area is properly sealed	No effect
2	Alteration in circulation, retention dikes may be necessary	Potential secondary effect	Eliminate portion of local population and adversely affect food chain	Eliminate portion of marsh habitat from productive use	Reduce beneficial uses in nearby areas	Analyses required if diking is not considered	Reduction of marsh would have secondary adverse effect
3	Precautions will be required during construction activities	Potential secondary effect	Potential secondary effect	Minor reduction of vacant land from wildlife use	No effect	Analyses are not required	No effect
4	Possible drainage considerations	Potential secondary effect	No effect	Minor reduction of vacant land from wildlife use	No effect	Analyses are not required	No effect
5	Alteration in circulation, retention dikes may be necessary	Potential secondary effect	Eliminate portion of local population and adversely affect food chain	Eliminate portion of mudflat habitat from productive use	Reduce beneficial uses in nearby areas	Analyses required if diking is not considered	Reduction of marsh would have secondary adverse effect
6	Although above MHHW, retention dikes may be necessary to prevent runoff into marsh	Potential secondary effect	Potential secondary effect	Minor reduction of vacant land from wildlife use	Future use is indicated for recreation	Analyses required if diking is not considered	No effect

TABLE B-1 - SECTION 404 CONCERNS (Cont'd)

Site	Water Quality	Water Supply	Shellfish Beds	Fish and Wildlife	Recreation	Sediment Quality	Air Quality
7	Possible drainage considerations	No effect	No effect if proper drainage is provided	Minor reduction of vacant land from wildlife use	No effect	Analyses would be required and proper drainage provided	No effect
8	No effect if area is properly sealed	No effect	No net effect	Cover material would be beneficial over long term	Beneficial to recreational values over long term	Analyses not required if area is properly sealed	No effect
9	No effect if area is properly sealed	No effect	Eliminate portion of local population and adversely affect food chain	Eliminate marsh habitat and reduce wildlife use	Indirectly adverse to beneficial uses of bay	Analyses not required if area is properly sealed	Reduction of marsh would have secondary adverse effect

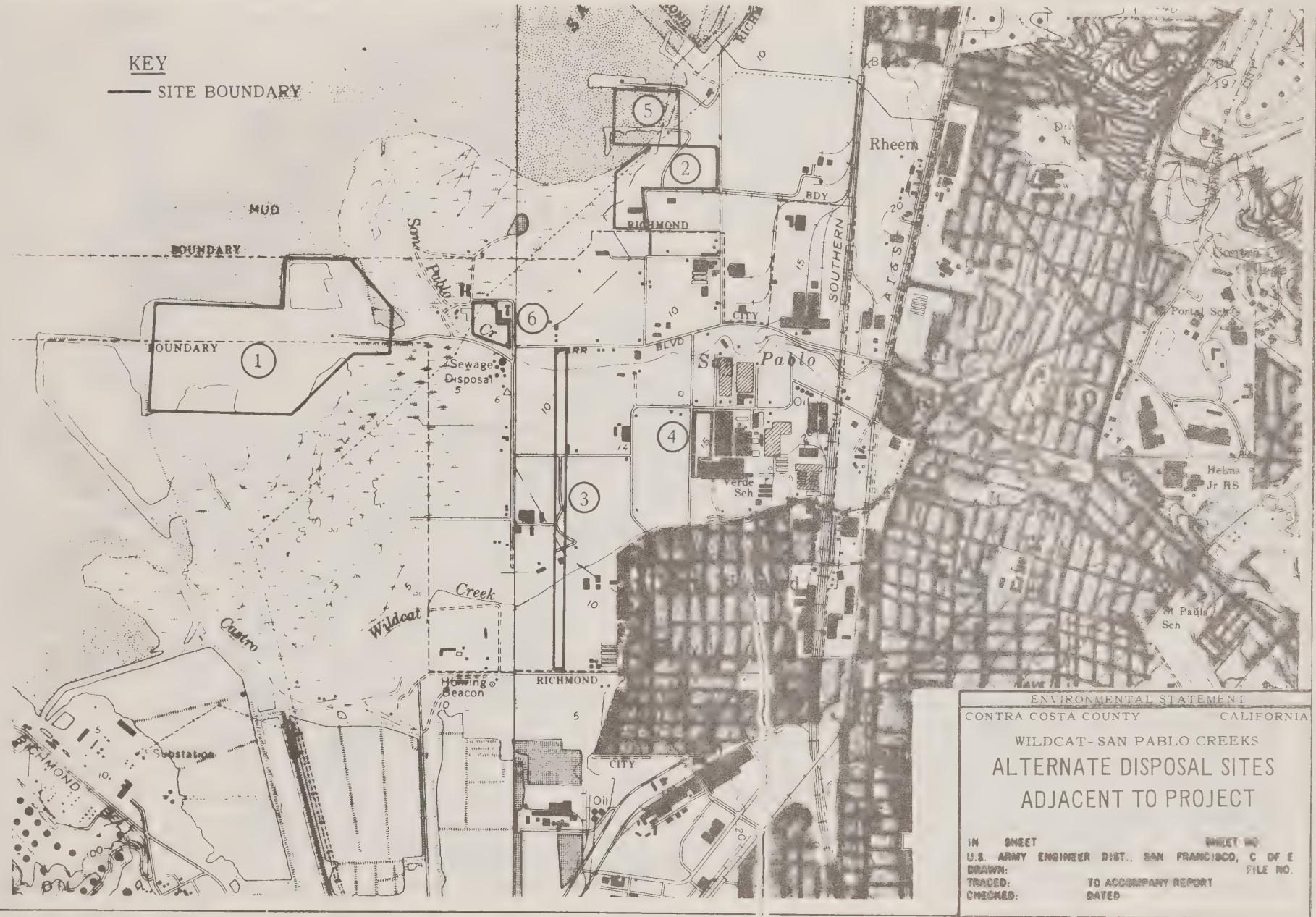
## REFERENCES

1. U.S. Army Engineer District, San Francisco, West Contra Costa Sanitary Landfill Project, Regulatory Permit Application (by Richmond Sanitary Service), Contra Costa County, California Final Environmental Statement, May 1977.
2. Fish and Wildlife Service, Letter Report to Richmond Sanitary Landfill Permit Application, U.S. Department of the Interior, January 17, 1975.
3. Personal Communication with Mr. Carl Gilson, East Bay Municipal Utilities District, March 29, 1977.
4. Richmond Coastline Plan, 1973.
5. Personal Communication with Mr. John Harvey, Fish and Wildlife Service, U.S. Department of the Interior, Sacramento, March 24, 1977.
6. W. F. Jones, Consulting Engineer, Soil Investigation for U.S. Freethy, et. al., 1975.
7. U.S. Army Engineer District, San Francisco, Wildcat and San Pablo Creeks, Water Resources Development, Contra Costa County, California, Final Environmental Statement, June 1976.
8. Contra Costa County Planning Department, North Richmond-San Pablo Bay Study, 1971.
9. San Francisco Conservation and Development Commission, San Francisco Bay Plan Supplement, 1969.
10. Personal Communication with Mr. Dudziak, Road Division, Contra Costa County Public Works Department, April 13, 1977.
11. Contra Costa County Planning Department, Open Space Conservation Plan, Contra Costa County, 1973.
12. Personal communication with Mr. Paul Tuttle, Pinole Planning Department, April 5, 1977.
13. Personal communication with Willima Henderson, East Bay Municipal Utilities District, April 4, 1977.
14. Environ, Albany Waterfront, Draft Environmental Statement, 1976.
15. URS Research Co., Marine Environmental Impact Analysis, Widening Highways 17 and 80 Along Shoreline of Richmond, California, 1973.

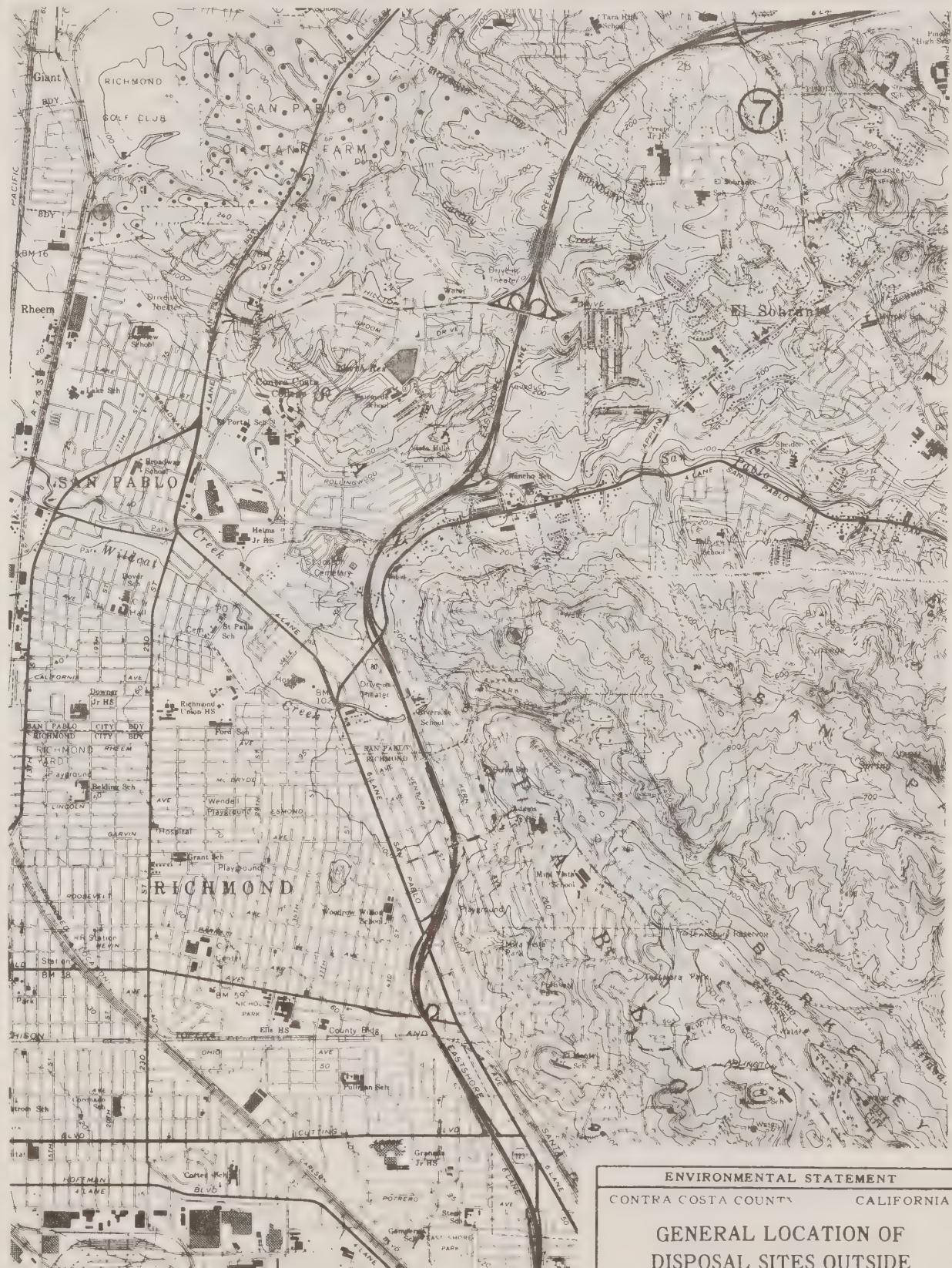


KEY

— SITE BOUNDARY







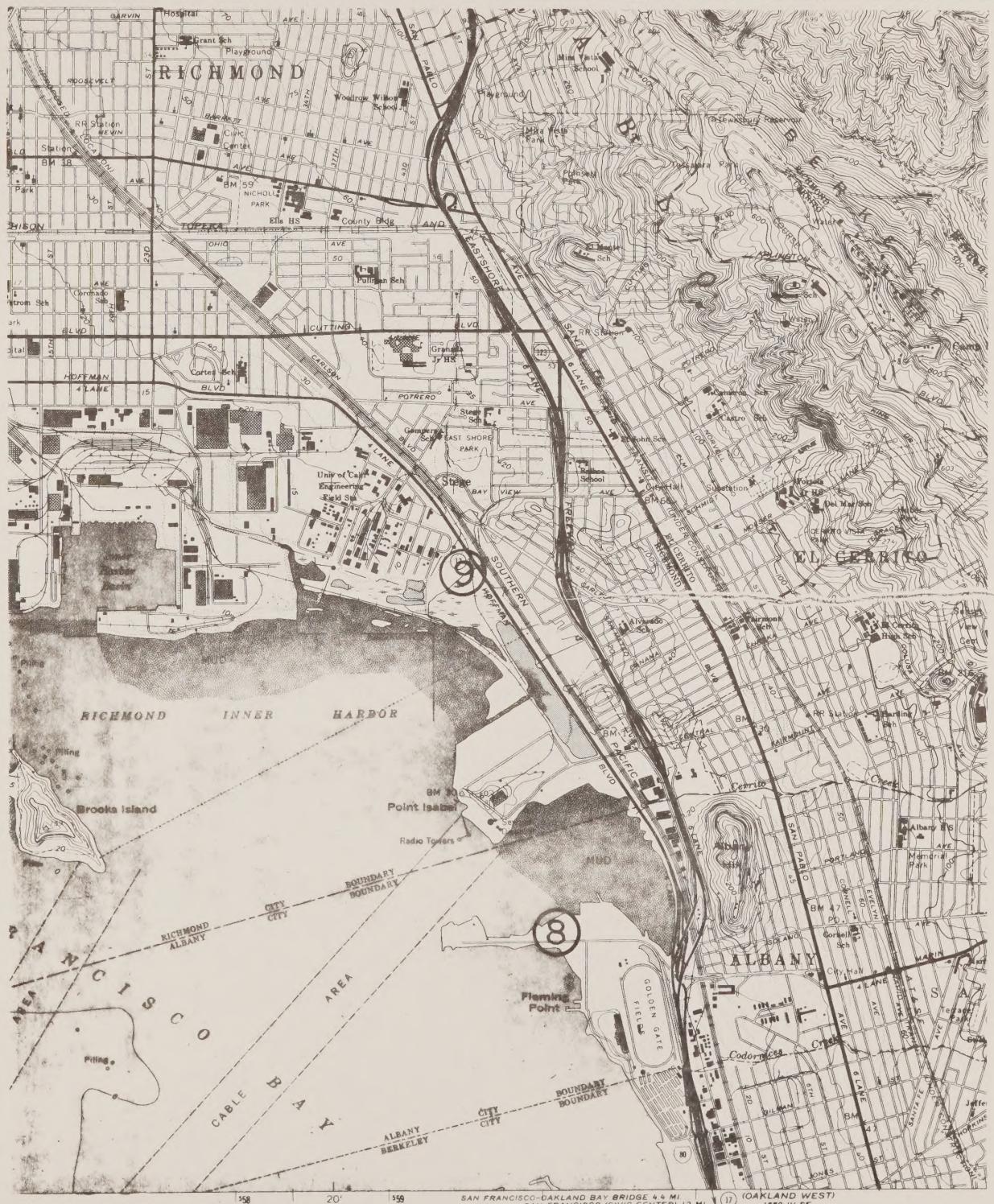
KEY  
 7 Disposal site location

ENVIRONMENTAL STATEMENT  
 CONTRA COSTA COUNTY, CALIFORNIA

GENERAL LOCATION OF  
 DISPOSAL SITES OUTSIDE  
 THE PROJECT AREA

U.S. ARMY ENGINEER DIST., SAN FRANCISCO, C OF E  
 FILE NO.  
 TO ACCOMPANY REPORT  
 DATED





8

KEY

## KEY

## ENVIRONMENTAL STATEMENT

CONTRA COSTA COUNTY

CALIFORNIA

## GENERAL LOCATION OF DISPOSAL SITES OUTSIDE THE PROJECT AREA

U.S. ARMY ENGINEER DIST., SAN FRANCISCO, C OF E  
DRAWN: FILE NO.  
TRACED: TO ACCOMPANY REPORT  
CHECKED: DATED

PLATE B-3





U.C. BERKELEY LIBRARIES



C101697487